Quality of Surface Waters of the United States 1965

Parts 3 and 4. Ohio River Basin and St. Lawrence River Basin

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1962

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PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Alabama, Georgia, Illinois, Indiana, Kentucky, Maryland, Michigan, Minnesota, New York, North Carolina, Ohio, Pennsylvania, Tennessee, West Virginia, Wisconsin, and with other agencies, by personnel of the Water Resources Division, E. L. Hendricks, chief hydrologist, G. W. Whetstone, assistant chief for Reports and Data Processing, under the general direction of G. A. Billingsley, chief, Reports Section, and B. A. Anderson, chief, Data Reports Unit.

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QUALITY OF SURFACE WATERS OF THE UNITED STATES, 1965

INTRODUCTION

The quality-of-water investigations of the United States Geological Survey are concerned with chemical and physical characteristics of the surface and ground water supplies of the Nation. Most of the investigations carried on in cooperation with State and Federal agencies deal with the amounts of matter in solution and in suspension in streams.

The record of chemical analysis, suspended sediment, and temperature of surface waters given in this volume serve as a basis for determining the suitability of waters for various uses. The flow and water quality of a stream are related to variations in rainfall and other forms of precipitation. In general, lower concentrations of dissolved solids may be expected during periods of high flow than during periods of low flow. Conversely, the suspended solids in some streams may change materially with relatively small variations in flow, whereas for other streams the quality of the water may remain relatively uniform throughout large ranges in discharge.

The Geological Survey has published annual records of chemical quality, suspended sediment, and water temperature since 1941. The records prior to 1948 were published each year in a single volume for the entire country, and in two volumes in 1948 and 1949. From 1950 to 1958, the records were published in four volumes and from 1959 to 1963 in five volumes. Beginning with the 1964 water year, water quality records obtained by the Geological Survey were published in a new series of annual releases on a state-boundary basis. These records are then published in six volumes in the Geological Survey water-supply paper series. The drainage basins covered in the six volumes are shown in Figure 1. The data given in this report were collected during the water year October 1, 1964 to September 30, 1965. The records are

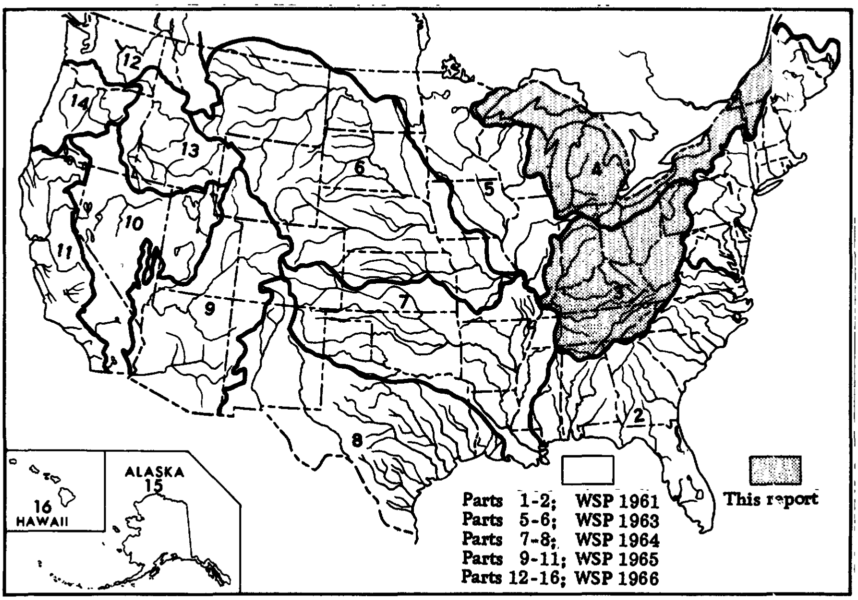

Figure 1.--Map of the United States showing basins covered by the six water-supply papers on quality of surface waters in 1964. The shaded part represents the section of the country covered by this volume; the unshaded part represents the section of the country covered by other water-supply papers.

arranged by drainage basins in downstream order according to the Geological Survey method of reporting streamflow. Stations on tributary streams are listed between stations on the main stem in the order in which those tributaries enter the main stem.

A station number has been assigned as an added means of identification for each stream location where regular measurements of water quantity or quality have been made. The numbers have been assigned to conform with the standard downstream order of listing gaging stations. The numbering system consists of 2 digits followed by a hyphen and a 6-digit number. The notation to the left of the hyphen identifies the Part or hydrologic region used by the Geological Survey for reporting hydrologic data. The number to the right of the hyphen represents the location of the station in the standard downstream order within each of the 16 parts (Fig. 1). The assigned numbers are in numerical order but are not consecutive. They are so selected from the complete 6-digit-number scale that intervening numbers will be available for future assignments to new locations. The identification number for each station in this report is printed to the left of the station name and contains only the essential digits. For example, the number is printed as 4-100 for a station whose complete identification number is 04-0100.00.

Descriptive statements are given for each sampling station where chemical analyses, temperature measurements, or sediment determinations have been made. These statements include location of the station, drainage area, periods of records available, extremes of dissolved solids, hardness, specific conductance, temperature, sediment loads, and other pertinent data. Records of discharge of the streams at or near the sampling station are included in most tables of analyses.

During the water year ending September 30, 1965, the Geological Survey maintained 267 stations on 181 streams for the study of chemical and physical characteristics of surface water. Samples were collected daily and monthly at 216 of these locations for chemical-quality studies. Samples also were collected less frequently at many other points. Water temperatures were measured continuously at 69 and daily at 123 stations. All surface water samples collected and analyzed during the year have not been included. Single analyses made of daily samples before compositing have not been reported. The specific conductance of almost all daily samples was determined, and as noted in the table headings this information is available for reference at the district offices listed under Division of Work, on page 28.

Quantities of suspended sediment are reported for 36 stations during the year ending September 30, 1965. Sediment samples were collected one or more times daily at most stations, depending on the rate of flow and changes in stage of the stream. Particle-size distributions of sediments were determined at 31 of the stations.

COLLECTION AND EXAMINATION OF SAMPLES

Quality of water stations usually are located at or near points on streams where streamflow is measured by the U.S. Geological Survey. The concentration of solutes and sediments at different locations in the stream-cross section may vary widely with different rates of water discharge depending on the source of the material and the turbulence and mixing of the stream. In general, the distribution of sediment in a stream section is much more variable than the distribution of solutes. It is necessary to sample some streams at several verticals across the channel and especially for sediment, to uniformly traverse the depth of flow. These measurements require special sampling equipment to adequately integrate the vertical and lateral variability of the concentration in the section. These procedures yield a velocity-weighted mean concentration for the section.

The near uniformly dispersed ions of the solute load move with the velocity of the transporting water. Accordingly, the mean section concentration of solutes determined from samples is a precise measure of the total solute load. The mean section concentration obtained from suspended sediment samples is a less precise measure of the total sediment load, because the sediment samplers do not traverse the bottom 0.3 foot of the sampling vertical where the concentration of suspended sediment is greatest and because a significant part of the coarser particles in many streams move in essentially continuous contact with the bed and are not represented in the suspended sediment sample. Hence, the computed sediment loads presented in this report are usually less than the total sediment loads. For most streams the difference between the computed and total sediment loads will be small, in the order of a few percent.

CHEMICAL QUALITY

The methods of collecting and compositing water samples for chemical analysis are described by Rainwater and Thatcher (1960, 301 p.). No single method of compositing samples is applicable to all problems related to the study of water quality. Although the method of 10-day periods or the equivalent of three composite samples per month generally is practiced, modifications usually are made on the basis of dissolved-solids content as indicated by measurements of conductivity of daily samples, supplemented by other information such as chloride content, river stage, weather conditions and other background information of the stream.

TEMPERATURE

Daily water temperatures were measured at most of the stations at the time samples were collected for chemical quality or sediment content. So far as practicable, the water temperatures were taken at about the same time each day in order that the data would be relatively unaffected by diurnal variations in temperature. Most large streams have a small diurnal variation in water temperature; small, shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. The thermometers used for determining water temperature were accurate to plus or minus 0.5°F.

At stations where thermographs are located, the records consist of maximum and minimum temperatures for each day, and the monthly averages of maximum daily and minimum daily temperatures.

SEDIMENT

In general, suspended-sediment samples were collected daily with depth-integrating cable-suspended samples (U.S. Inter-Agency, 1963, and 1952.) from a fixed sampling point at one vertical in the cross section. A hand sampler was used at many stations during periods of low flow. Depth-integrated samples were collected periodically at three or more verticals in the cross section to determine the cross-sectional distribution of the concentration of suspended sediment with respect to that at the daily sampling vertical. In streams where transverse distribution of sediment concentration ranges widely, samples were taken at two or more verticals to define more accurately the average concentration of the cross section. During periods of high or rapidly changing flow, samples were taken two or more times a day at most sampling stations.

Sediment concentrations were determined by filtration-evaporation method. At many stations the daily mean concentration for some days was obtained by plotting the velocity-weighted instantaneous concentrations on the gage-height chart. The plotted concentrations, adjusted if necessary, for cross-sectional distribution were connected or averaged by continuous curves to obtain a concentration graph. This graph represented the estimated velocity-weighted concentration at any time, and for most periods daily mean concentrations were determined from the graph. The days were divided into shorter intervals when the concentration and water discharge were changing rapidly. During some periods of minor variation in concentration, the average concentration of the samples was used as the daily mean concentration. During extended periods of relatively uniform concentration and flow, samples for a number of days were composited to obtain average concentrations and average daily loads for each period.

For some periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge. The estimates were further guided by weather conditions and sediment discharge for other stations.

In many instances where there were no observations for several days, the suspended-sediment loads for individual days are not estimated, because numerous factors influencing the quantities of transported sediment made it very difficult to make accurate estimates for individual days. However, estimated loads of suspended sediment for missing days in an otherwise continuous period of sampling have been included in monthly and annual totals in order to provide a complete record. For some streams, samples were collected weekly, monthly, or less frequently, and only rates of sediment discharge at the time of sampling are shown.

In addition to the records of quantities of suspended sediment transported, records of the particle sizes of sediment are included. The particle sizes of the suspended sediment for many of the stations, and the particle sizes of the bed material for some of the stations were determined periodically.

The size of particles in stream sediments commonly range from colloidal clay (finer than 0.001 mm) to coarse sand or gravel (coarser than 1.0 mm). The common methods of particle-size analyses cannot accommodate such a wide range in particle size. Hence, it was necessary to separate most samples into two parts, one coarser than 0.062 mm and one finer than 0.062 mm. The separations were made by sieve or by a tube containing a settling medium of water. The coarse fractions were classified by sieve separation or by the visual accumulation tube (U.S. Inter-Agency, 1957). The fine fractions were classified by the pipet method (Kilmer and Alexander, 1949) or the bottom withdrawal tube method (U.S. Inter-Agency, 1943).

EXPRESSION OF RESULTS

The quantities of solute concentrations analyzed in the laboratory are measured by weight-volume units (milligrams per liter) and for reporting, are converted to weight-weight units (parts per million). For most waters, this conversion is made by assuming that the liter of water sample weighs 1 kilogram; and thus milligrams per liter are equivalent to parts per million (ppm).

Equivalents per million are not reported, but they can be calculated easily from the parts per million data. An equivalent per million (epm) is a unit chemical combining weight of a constituent in a million unit weights of water. Chemical equivalence in equivalents per million can be obtained by (a) dividing the concentration in parts per million by the combining weight of that ion, or (b) multiplying the concentration (in ppm) by the reciprocals of the combining weights. The following table lists the reciprocals of the combining weights of cations and anions generally reported in water analyses.

The conversion factors are computed from atomic weights based on carbon-12 (International Union of Pure and Applied Chemistry, 1961).

Conversion factors: Parts per million to equivalents per million

Ion	Multiply by	Ion	Multiply by
Aluminum (Al^{+3})......	0.11119	Iron (Fe^{+3}).............	0.05372
Barium (Ba^{+2})..........	.01456	Lead (Pb^{+2}).............	.00965
Bicarbonate (HCO_3^{-1}).	.01639	Lithium (Li^{+1}).........	.14411
Bromide (Br^{-1})	.01251	Magnesium (Mg^{+2})...	.08226
Calcium (Ca^{+2}).........	.04990	Manganese (Mn^{+2})....	.03640
Carbonate (CO_3^{-2})......	.03333	Nickel (Ni^{+2})...........	.03406
Chloride (Cl^{-1}).........	.02821	Nitrate (NO_3^{-1}).........	.01613
Chromium (Cr^{+6})......	.11539	Nitrite (NO_2^{-1}).........	.02174
Cobalt (Co^{+2})	.03394	Phosphate (PO_4^{-3})....	.03159
Copper (Cu^{+2})..........	.03148	Potassium (K^{+1}).......	.02557
Fluoride (F^{-1})..........	.05264	Sodium (Na^{+1})..........	.04350
Hydrogen (H^{+1}).........	.99209	Strontium (Sr^{+2}).......	.02283
Hydroxide (OH^{-1})	.05880	Sulfate (SO_4^{-2}).........	.02082
Iodide (I^{-1})..............	.00788	Zinc (Zn^{+2}).............	.03060

Results given in parts per million can be converted to grains per United States gallon by dividing by 17.12.

The hardness of water is conventionally expressed in all water analyses in terms of an equivalent quantity of calcium carbonate. Such a procedure is required because hardness is caused by several different cations, present in variable proportions. It should be remembered that hardness is an expression in conventional terms of a property of water. The actual presence of calcium carbonate in the concentration given is not to be assumed. The hardness caused by calcium and magnesium (and other cations if significant) equivalent to the carbonate and bicarbonate is called carbonate hardness; the hardness in excess of this quantity is called noncarbonate hardness. Hardness or alkalinity values expressed in parts per million as calcium carbonate may be converted to equivalents per million by dividing by 50.

The value usually reported as dissolved solids is the residue on evaporation after drying at 180°C for 1 hour. For some waters, particularly those containing moderately large quantities of soluble salts, the value reported is calculated from the quantities of the various determined constituents using the carbonate equivalent of the reported bicarbonate. The calculated sum of the constituents may be given instead of or in addition to the residue. In the analyses of most waters used for irrigation, the quantity of dissolved solids is given in tons per acre-foot as well as in parts per million.

Specific conductance is given for most analyses and was determined by means of a conductance bridge and using a standard potassium chloride solution as reference. Specific conductance values are expressed in micromhos per centimeter at 25°C. Specific conductance in micromhos is 1 million times the reciprocal of specific resistance at 25°C. Specific resistance is the resistance in ohms of a column of water 1 centimeter long and 1 square centimeter in cross section.

The discharge of the streams is reported in cubic feet per second (see Streamflow, p. 25) and the temperature in degrees Fahrenheit. Color is expressed in units of the platinum-cobalt scale proposed by Hazen (1892). A unit of color is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Hydrogen-ion concentration is expressed in terms of pH units. By definition the pH value of a solution is the negative logarithm of the concentration of gram ions of hydrogen.

An average of analyses for the water year is given for most daily sampling stations. Most of these averages are arithmetical, time-weighted, or discharge-weighted; when analyses during a year are all on 10-day composites of daily samples with no missing days, the arithmetical and time-weighted averages are equivalent. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the river each day for the water year. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all of the water passing a given station during the year. A discharge-weighted average is computed by multiplying the discharge for the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. For most streams, discharge-weighted averages are lower than arithmetical averages because at times of high discharge the rivers generally have low concentrations of dissolved solids.

A program for computing these averages on an electronic digital computer was instituted in the 1962 water year. This program extended computations to include averages for pH values expressed in terms of hydrogen ion and averages for the concentration of individual constituents expressed in tons per day. Concentrations in tons per day are computed the same as daily sediment loads.

The concentration of sediment in parts per million is computed as 1,000,000 times the ratio of the weight of sediment to the weight of water-sediment mixture. Daily sediment loads are expressed in tons per day and except for subdivided days, are usually obtained by multiplying daily mean sediment concentrations in parts per million by the daily mean discharge in cubic feet per second, and the conversion factor, normally 0.0027.

Particle size analyses are expressed in percentages of material finer than classified sizes (in millimeters). The size classification used in this report agrees closely with recommendations made by the American Geophysical Union Subcommittee on sediment terminology (Lane and others, 1947). The particle size distributions given in this report are not necessarily representative of the particle sizes of sediment in transport in the natural stream. Most of the organic matter is removed and the sample is subjected to mechanical and chemical dispersion before analysis of the silt and clay.

COMPOSITION OF SURFACE WATERS

All natural waters contain dissolved mineral matter. The quantity of dissolved mineral matter in a natural water depends primarily on the type of rocks or soils with which the water has been in contact and the length of time of contact. Ground water is generally more highly mineralized than surface runoff because it remains in contact with the rocks and soils for much longer periods. Some streams are fed by both surface runoff and ground water from springs or seeps. Such streams reflect the chemical character of their concentrated underground sources during dry periods and are more dilute during periods of heavy rainfall. The dissolved-solids content in a river is frequently increased by drainage from mines or oil fields, by the addition of industrial or municipal wastes, or--in irrigated regions--by drainage from irrigated lands.

The mineral constituents and physical properties of natural waters reported in the tables of analyses include those that have a practical bearing on water use. The results of analyses generally include silica, iron, calcium, magnesium, sodium, potassium (or sodium and potassium together calculated as sodium), lithium, carbonate, bicarbonate, sulfate, chloride, fluoride, nitrate, boron, pH, dissolved solids, and specific conductance. Aluminum, manganese, color, acidity, dissolved oxygen, and other dissolved constituents and physical properties are reported for certain streams. Phenolic material and minor elements including strontium, chromium, nickel, copper, lead, zinc, cobalt, and other trace elements are determined occasionally for a few streams in connection with specific problems and the results are reported. The source and significance of the different constituents and properties of natural waters are discussed in the following paragraphs. The constituents are arranged in the order that they appear in the tables.

MINERAL CONSTITUENTS IN SOLUTION

Silica (SiO_2)

Silica is dissolved from practically all rocks. Some natural surface waters contain less than 5 parts per million of silica and few contain more than 50 parts, but the more common range is from 10 to 30 parts per million. Silica affects the usefulness of a water because it contributes to the formation of boiler scale; it usually is removed from feed water for high-pressure boilers. Silica also forms troublesome deposits on the blades of steam turbines.

Aluminum (Al)

Aluminum is usually present only in negligible quantities in natural waters except in areas where the waters have been in contact with the more soluble rocks of high aluminum content such as bauxite and certain shales. Acid waters often contain large amounts of aluminum. It may be troublesome in feed waters where it tends to be deposited as a scale on boiler tubes.

Iron (Fe)

Iron is dissolved from many rocks and soils. On exposure to the air, normal basic waters that contain more than 1 part per million of iron soon become turbid with the insoluble reddish ferric oxide produced by oxidation. Surface waters, therefore, seldom contain as much as 1 part per million of dissolved iron, although some acid waters carry large quantities of iron in solution. Iron causes reddish-brown stains on porcelain or enameled ware and fixtures and on fabrics washed in the water.

Manganese (Mn)

Manganese is dissolved in appreciable quantities from rocks in some sections of the country. It resembles iron in its chemical behavior and in its occurrence in natural waters. However, manganese in rocks is less abundant than iron. As a result the concentration of manganese is much less than that of iron and is not regularly determined in many areas. It is especially objectionable in water used in laundry work and in textile processing. Concentrations as low as 0.2 part per million may cause a dark-brown or black stain on fabrics and porcelain fixtures. Appreciable quantities of manganese are often found in waters containing objectionable quantities of iron.

Calcium (Ca)

Calcium is dissolved from almost all rocks and soils, but the highest concentrations are usually found in waters that have been in contact with limestone, dolomite, and gypsum. Calcium and magnesium make water hard and are largely responsible for the formation of boiler scale. Most waters associated with granite or silicious sands contain less than 10 parts per million of calcium;

waters in areas where rocks are composed of dolomite and limestone contain from 30 to 100 parts per million; and waters that have come in contact with deposits of gypsum may contain several hundred parts per million.

Magnesium (Mg)

Magnesium is dissolved from many rocks, particularly from dolomitic rocks. Its effect in water is similar to that of calcium. The magnesium in soft waters may amount to only 1 or 2 parts per million, but water in areas that contain large quantities of dolomite or other magnesium-bearing rocks may contain from 20 to 100 parts per million or more of magnesium.

Strontium (Sr)

Strontium is a typical alkaline-earth element and is similar chemically to calcium. Strontium may be present in natural water in amounts up to a few parts per million much more frequently than the available data indicate. In most surface water the amount of strontium is small in proportion to calcium. However, in sea water the ratio of strontium to calcium is 1:30.

Sodium and potassium (Na and K)

Sodium and potassium are dissolved from practically all rocks. Sodium is the predominant cation in some of the more highly mineralized waters found in the western United States. Natural waters that contain only 3 or 4 parts per million of the two together are likely to carry almost as much potassium as sodium. As the total quantity of these constituents increases, the proportion of sodium becomes much greater. Moderate quantities of sodium and potassium have little effect on the usefulness of the water for most purposes, but waters that carry more than 50 or 100 parts per million of the two may require careful operation of steam boilers to prevent foaming. More highly mineralized waters that contain a large proportion of sodium salts may be unsatisfactory for irrigation.

In this report, sodium and potassium values that are calculated and reported as sodium are indicated by footnote.

Lithium (Li)

Data concerning the quantity of lithium in water are scarce. It is usually found in small amounts in thermal springs and saline waters. Lithium also occurs in streams where some industries dump their waste water. The scarcity of lithium in rocks is responsible more than other factors for relatively small amounts present in water.

Bicarbonate, carbonate and hydroxide (HCO_3, CO_3, OH)

Bicarbonate, carbonate, or hydroxide is sometimes reported as alkalinity. The alkalinity of a water is defined as its capacity to consume a strong acid to pH 4.5. Since the major causes of alkalinity in most natural waters are carbonate and bicarbonate ions dissolved from carbonate rocks, the results are usually reported in terms of these constituents. Although alkalinity may suggest the presence of definite amounts of carbonate, bicarbonate or hydroxide, it may not be true due to other ions that contribute to alkalinity such as silicates, phosphates, borates, possibly fluoride, and certain organic anions which may occur in colored waters. The significance of alkalinity to the domestic, agricultural, and industrial user is usually dependent upon the nature of the cations (Ca, Mg, Na, K) associated with it. However, alkalinity in moderate amounts does not adversely affect most users.

Hydroxide may occur in water that has been softened by the lime process. Its presence in streams usually can be taken as an indication of contamination and does not represent the natural chemical character of the water.

Sulfate (SO_4)

Sulfate is dissolved from many rocks and soils--in especially large quantities from gypsum and from beds of shale. It is formed also by the oxidation of sulfides of iron and is therefore present in considerable quantities in waters from mines. Sulfate in waters that contain much calcium and magnesium causes the formation of hard scale in steam boilers and may increase the cost of softening the water.

Chloride (Cl)

Chloride is dissolved from rock materials in all parts of the country. Surface waters in the humid regions are usually low in chloride, whereas streams in arid or semiarid regions may contain several hundred parts per million of chloride leached from soils and rocks, especially where the streams receive return drainage from irrigated lands or are affected by ground-water inflow carrying appreciable quantities of chloride. Large quantities of chloride in water that contains a high content of calcium and magnesium increases the water's corrosiveness.

Fluoride (F)

Fluoride has been reported as being present in some rocks to about the same extent as chloride. However, the quantity of fluoride in natural surface waters is ordinarily very small compared to that of chloride. Investigations have proved that fluoride concentrations of about 0.6 to 1.7 ppm reduced the incidence of dental caries and that concentrations greater than 1.7 ppm also protect the teeth from cavities but cause an undesirable black stain (Durfor and Becker, 1964, p. 20). Public Health Service, 1962 (p. 8), states, "When fluoride is naturally present in drinking water, the concentration should not average more than the appropriate upper control limit (0.6 to 1.7 ppm). Presence of fluoride in average concentration greater than two times the optimum values shall constitute grounds for rejection of the supply." Concentration higher than the stated limits may cause mottled enamel in teeth, endemic cumulative fluorosis, and skeletal effects.

Nitrate (NO_3)

Nitrate in water is considered a final oxidation product of nitrogenous material and may indicate contamination by sewage or other organic matter. The quantities of nitrate present in surface waters are generally less than 5 parts per million (as NO_3) and have no effect on the value of the water for ordinary uses.

It has been reported that as much as 2 parts per million of nitrate in boiler water tends to decrease intercrystalline cracking of boiler steel. Studies made in Illinois indicate that nitrates in excess of 70 parts per million (as NO_3) may contribute to methemoglobinemia ("blue babies") (Faucett and Miller, 1946), and more recent investigations conducted in Ohio show that drinking water containing nitrates in the range of 44 to 88 ppm (as NO_3) may cause methemoglobinemia (Waring, 1949). A report published by the National Research Council, Maxcy (1950) concludes that a nitrate content in excess of 44 parts per million (as NO_3) should be regarded as unsafe for infant feeding. U.S. Public Health Service (1962) sets 45 ppm as the upper limit.

Phosphate (PO_4)

Phosphorus is an essential element in the growth of plants and animals. Some sources that contribute nitrate, such as organic wastes are also important sources of phosphate. The addition of phosphates in water treatment constitutes a possible source, although the dosage is usually small. In some areas, phosphate fertilizers may yield some phosphate to water. A more important source is the increasing use of phosphates in detergents. Domestic and industrial sewage effluents often contain considerable amounts of phosphate.

Boron (B)

Boron in small quantities has been found essential for plant growth, but irrigation water containing more than 1 part per million boron is detrimental to citrus and other boron-sensitive crops. Boron is reported in Survey analyses of surface waters in arid and semiarid regions of the Southwest and West where irrigation is practiced or contemplated, but few of the surface waters analyzed have harmful concentrations of boron.

Dissolved solids

The reported quantity of dissolved solids--the residue on evaporation--consists mainly of the dissolved mineral constituents in the water. It may also contain some organic matter and water of crystallization. Waters with less than 500 parts per million of dissolved solids are usually satisfactory for domestic and some industrial uses. Water containing several thousand parts per million of dissolved solids are sometimes successfully used for irrigation where practices permit the removal of soluble salts through the application of large volumes of water on well-drained lands, but generally water containing more than about 2,000 ppm is considered to be unsuitable for long-term irrigation under average conditions.

Chromium (Cr)

Few if any waters contain chromium from natural sources. Natural waters can probably contain only traces of chromium as a cation unless the pH is very low. When chromium is present in water, it is usually the result of pollution by industrial wastes. Fairly high concentrations of chromate anions are possible in waters having normal pH levels. Concentrations of more than 0.05 ppm of chromium in the hexavalent form constitute grounds for rejection of a water for domestic use on the basis of the standards of the U.S. Public Health Service (1962).

Nickel and Cobalt (Ni, Co)

Nickel and cobalt are very similar in chemical behavior and also closely related to iron. Both are present in igneous rocks in small amounts and are more prevalent in silicic rocks. Any nickel in water is likely to be in small amounts and could be in a colloidal state. Cobalt may be taken into solution more readily than nickel. It may be taken into solution in small amounts through bacteriological activity similar to that causing solution of manganese. However, few data on the occurrence of either nickel or cobalt in natural water are available.

Copper (Cu)

Copper is a fairly common trace constituent of natural water. Small amounts may be introduced into water by solution of copper and brass water pipes and other copper-bearing equipment in contact with the water, or from copper salts added to control algae in open reservoirs. Copper salts such as the sulfate and chloride are highly soluble in waters with a low pH but in water of normal alkalinity these salts hydrolyze and the copper may be precipitated. In the normal pH range of natural water containing carbon dioxide, the copper might be precipitated as carbonate. The oxidized portions of sulfide-copper ore bodies contain other copper compounds. The presence of copper in mine water is common.

Copper imparts a disagreeable metallic taste to water. As little as 1.5 ppm can usually be detected, and 5 ppm can render the water unpalatable. Copper is not considered to be a cumulative systemic poison like lead and mercury; most copper ingested is excreted by the body and very little is retained. The pathological effects of copper are controversial, but it is generally believed very unlikely that humans could unknowingly ingest toxic quantities from palatable drinking water. The U.S. Public Health Service (1962) recommends that copper should not exceed 1.0 ppm in drinking and culinary water.

Lead (Pb)

Lead is only a minor element in most natural waters, but industrial or mine and smelter effluents may contain relatively large amounts of lead. Many of the commonly used lead salts are water soluble.

Traces of lead in water usually are the result of solution of lead pipe through which the water has passed. Amounts of lead of the order of 0.05 ppm are significant, as this concentration is the upper limit for drinking water in the standards adopted by the U.S. Public Health Service (1962). Higher concentrations may be added to water through industrial and mine-waste disposal. Lead in the form of sulfate is reported to be soluble in water to the extent of 31 ppm (Seidell, 1940) at 25°C. In natural water this concentration would not be approached, however, since a pH of less than 4.5 would probably be required to prevent formation of lead hydroxide and carbonate. It is reported (Pleissner, 1907) that at 18°C water free of carbon dioxide will dissolve the equivalent of 1.4 ppm of lead and the solubility is increased nearly four fold by the presence of 2.8 ppm of carbon dioxide in the solution. Presence of other ions may increase the solubility of lead.

Zinc (Zn)

Zinc is abundant in rocks and ores but is only a minor constituent in natural water because the free metal and its oxides are only sparingly soluble. In most alkaline surface waters it is present only in trace quantities, but more may be present in acid water. Chlorides and sulfates of zinc are highly soluble. Zinc is used in many commercial products, and industrial wastes may contain large amounts.

Zinc in water does not cause serious effects on health, but produces undesirable esthetic effects. The U.S. Public Health Service (1962, p. 55) recommends that the zinc content not exceed 5 ppm in drinking and culinary water.

Barium (Ba)

Barium may replace potassium in some of the igneous rock minerals, especially feldspar and barium sulfate (barite) is a common barium mineral of secondary origin. Only traces of barium are present in surface water and sea water. Because natural water contains sulfate, barium will dissolve only in trace amounts. Barium sometimes occurs in brines from oil-well wastes.

The U.S. Public Health Service (1962) states that water containing concentrations of barium in excess of 1 ppm is not suitable for drinking and culinary use because of the serious toxic effects of barium on heart, blood vessels, and nerves.

Bromide (Br)

Bromine is a very minor element in the earth's crust and is normally present in surface waters in only minute quantities. Measurable amounts may be found in some streams that receive industrial wastes, and some natural brines may contain rather high concentrations. It resembles chloride in that it tends to be concentrated in sea water.

Iodide (I)

Iodide is considerably less abundant both in rocks and water than bromine. Measurable amounts may be found in some streams that receive industrial wastes, and some natural brines may contain rather high concentrations. It occurs in sea water to the extent of less than 1 ppm. Rankama and Sahama (1950) report iodide present in rainwater to the extent of 0.001 to 0.003 ppm and in river water in about the same amount. Few waters will contain over 2.0 ppm.

PROPERTIES AND CHARACTERISTICS OF WATER

Hardness

Hardness is the characteristic of water that receives the most attention in industrial and domestic use. It is commonly recognized by the increased quantity of soap required to produce lather. The use of hard water is also objectionable because it contributes to the formation of scale in boilers, water heaters, radiators, and pipes, with the resultant decrease in rate of heat transfer, possibility of boiler failure, and loss of flow.

Hardness is caused almost entirely by compounds of calcium and magnesium. Other constituents--such as iron, manganese, aluminum, barium, strontium, and free acid--also cause hardness, although they usually are not present in quantities large enough to have any appreciable effect.

Generally, bicarbonate and carbonate determine the proportions of "carbonate" hardness of water. Carbonate hardness is the amount of hardness chemically equivalent to the amount of bicarbonate and carbonate in solution. Carbonate hardness is approximately equal to the amount of hardness that is removed from water by boiling.

Noncarbonate hardness is the difference between the hardness calculated from the total amount of calcium and magnesium in solution and the carbonate hardness. If the carbonate hardness (expressed as calcium carbonate) equals the amount of calcium and magnesium hardness (also expressed as calcium carbonate) there is no noncarbonate hardness. Noncarbonate hardness is about equal to the amount of hardness remaining after water is boiled. The scale formed at high temperatures by the evaporation of water containing noncarbonate hardness commonly is tough, heat resistant, and difficult to remove.

Although many people talk about soft water and hard water, there has been no firm line of demarcation. Water that seems hard to an easterner may seem soft to a westerner. In this report hardness of water is classified as follows:

Hardness range (calcium carbonate in ppm)	Hardness description
0-60	Soft
61-120	Moderately hard
121-180	Hard
more than 180	Very hard

For public use, water with hardness above 200 parts per million generally requires softening treatment (Durfor and Becker, 1964, p. 23-27).

Acidity (H^{+1})

The use of the terms acidity and alkalinity is widespread in the literature of water analysis and is a cause of confusion to those who are more accustomed to seeing a pH of 7.0 used as a neutral point. Acidity of a natural water represents the content of free carbon dioxide and other uncombined gases, organic acids and salts of strong acids and weak bases that hydrolyze to give hydrogen ions. Sulfates of iron and aluminum in mine and industrial wastes are common sources of acidity. The presence of acidity is reported in those waters which have a pH below 4.5.

Sodium adsorption ratio (SAR)

The term "sodium adsorption ratio (SAR)" was introduced by the U.S. Salinity Laboratory Staff (1954). It is a ratio expressing the relative activity of sodium ions in exchange reaction with soil and is an index of the sodium or alkali hazard to the soil. Sodium adsorption ratio is expressed by the equation:

$$SAR = \frac{Na^{+}}{\sqrt{\frac{Ca^{++}+Mg^{++}}{2}}}$$

where the concentrations of the ions are expressed in milliequivalents per liter (or equivalents per million for most irrigation waters).

Waters are divided into four classes with respect to sodium or alkali hazard: low, medium, high, and very high, depending upon the SAR and the specific conductance. At a conductance of 100 micromhos per centimeter the dividing points are at SAR values of 10, 18, and 26, but at 5,000 micromhos the corresponding dividing points are SAR values of approximately 2.5, 6.5, and 11. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Specific conductance (micromhos per centimeter at 25°C)

Specific conductance is a convenient, rapid determination used to estimate the amount of dissolved solids in water. It is a measure of the ability of water to transmit a small electrical current (see p. 8). The more dissolved solids in water that can transmit electricity the greater the specific conductance of the water. Commonly, the amount of dissolved solids (in parts per million) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream or from well to well and it may even vary in the same source with changes in the composition of the water (Durfor and Becker, 1964 p. 27-29).

Specific conductance of most waters in the eastern United States is less than 1,000 micromhos, but in the arid western parts of the country, a specific conductance of more than 1,000 micromhos is common.

Hydrogen-ion concentration (pH)

Hydrogen-ion concentration is expressed in terms of pH units (see p. 8). The values of pH often are used as a measure of the solvent power of water or as an indicator of the chemical behavior certain solutions may have toward rock minerals.

The degree of acidity or alkalinity of water, as indicated by the hydrogen-ion concentration, expressed as pH, is related to the corrosive properties of water and is useful in determining the proper treatment for coagulation that may be necessary at water-treatment plants. A pH of 7.0 indicates that the water is neither acid nor alkaline. pH readings progressively lower than 7.0 denote increasing acidity and those progressively higher than 7.0 denote increasing alkalinity. The pH of most natural surface waters ranges between 6 and 8. Some alkaline surface waters have pH values greater than 8.0 and waters containing free mineral acid or organic matter usually have pH values less than 4.5.

The investigator who utilizes pH data in his interpretations of water analyses should be careful to place pH values in their proper perspective.

Color

In water analysis the term "color" refers to the appearance of water that is free from suspended solids. Many turbid waters that appear yellow, red, or brown when viewed in the stream show very little color after the suspended matter has been removed. The yellow-to-brown color of some waters is usually caused by organic matter extracted from leaves, roots, and other organic substances in the ground. In some areas objectionable color in water results from industrial wastes and sewage. Clear deep water may appear blue as the result of a scattering of sunlight by the water molecules. Water for domestic use and some industrial uses should be free from any perceptible color. A color less than 15 units generally passes unnoticed (U.S. Public Health Service, 1962). Some swamp waters have natural color in excess of 300 units.

The extent to which a water is colored by material in solution is commonly reported as a part of a water analysis because a significant color in water may indicate the presence of organic material that may have some bearing on the dissolved solids content. Color in water is expressed in terms of units between 0 and 500 or more based on the above standard (see p. 8).

Oxygen consumed

Oxygen consumed is a measure of the amount of oxygen required to oxidize unstable materials in water and may be correlated with natural-water color or with some carbonaceous organic pollution from sewage or industrial wastes.

Tolerances for oxygen consumed in feed water for low- and high-pressure boilers are 15 and 3 ppm, respectively (Northeast Water Works Association, 1940). Wash water containing more than 8 ppm has been reported to import a bad odor to textiles; concentrations for water used in beverages and brewing range from 0.5 to 5.0 ppm (California State Water Pollution Control Board, 1952, 1954).

Dissolved oxygen (DO)

Adequate dissolved oxygen is necessary for the life of fish and other aquatic organisms and is an indicator for corrosivity of water, photosynthetic activity, and septicity. It is one of the most important indicators of the condition of a water supply for biological, chemical and sanitary investigations (Rose, 1965).

Biochemical oxygen demand (BOD)

Biochemical oxygen demand is a measure of the oxygen required to oxidize the carbonaceous organic material usable as a source of food by aerobic organisms.

Chemical oxygen demand (COD)

Chemical oxygen demand indicates the quantity of oxidizable compounds present in a water and will vary with water compositions, concentration of reagent, temperature, period of contact, and other factors.

Organics

Phenols.--Phenolic material in water resources is invariably the result of pollution. Phenols are widely used as disinfectants and in the synthesis of many organic compounds. Waste products from oil refineries, coke areas, and chemical plants may contain high concentrations. Fortunately, phenols decompose in the presence of oxygen and organic material, and their persistence downstream from point of entry is relatively short lived. The rate of decomposition is dependent on the environment.

Very low concentrations impart such a disagreeable taste to water that it is highly improbable that harmful amounts could be consumed unknowingly. Reported thresholds of detection of taste and odor range from 0.001 to 0.01 ppm.

Most probable number (MPN).--An index for determining the extent of pollution in water is the most probable number which is a direct count of coliform colonies per 100 milliliters of water.

Detergents (MBAS).--Anionic surfactants (methylene blue active substance, MBAS) in detergents resist chemical oxidation and biological breakdown. Their persistence in water over long periods of time contributes to pollution of both ground water and surface water. Some of the effects produced from detergent pollution are unpleasant taste, odor, and foaming (Wayman, and others, 1962). Although the physiological implications of MBAS to human beings is unknown, prolonged ingestion of this material by rats is believed to be nontoxic (Paynter, 1960). The U.S. Public Health Service (1962) recommends that MBAS should not exceed 0.5 ppm in drinking and culinary waters.

Temperature

Temperature is an important factor in property determining the quality of water. This is very evident for such a direct use as an industrial coolant. Temperature is also important, but perhaps not so evident, for its indirect influence upon aquatic biota, concentrations of dissolved gases, and distribution of chemical solutes in lakes and reservoirs as a consequence of thermal stratification and variation.

Surface water temperatures tend to change seasonally and daily with air temperatures, except for the outflow of large springs. Superimposed upon the annual temperature cycle is a daily fluctuation of temperature which is greater in warm seasons than in cold and greater in sunny periods than with a cloud cover. Natural warming is due mainly to absorption of a solar radiation by the water and secondarily to transfer of heat from the air. Condensation of water vapor at the water surface is reported to furnish measurable quantities of heat. Heat loss takes place largely through radiation, with further losses through evaporation and conduction to the air and to the stream bed. Thus the temperature of a small stream generally reaches a maximum in mid- to late afternoon due to solar heating and reaches a minimum from early to mid-morning after nocturnal radiation.

Temperature variations which commonly occur during summer in lakes and reservoirs of temperate regions result in a separation of the water volume into a circulating upper portion and a noncirculating lower portion. Separating the two is a stratum of water of variable vertical thickness in which the temperature decreases rapidly with increasing depth. This physical division of the water mass into a circulating and a stagnant portion is the result of density differences in the water column associated with the temperature distribution. Knowledge of the stratification in a body of water may result in increased utility by locating strata of more suitable characteristics. For example, the elevation of an intake pipe may be changed to obtain water of lower temperature, higher pH, less dissolved iron, or other desirable properties.

Temperature is a major factor in determining the effect of pollution on aquatic organisms. The resistance of fish to certain toxin substances has been shown to vary widely with temperature. The quantity of dissolved oxygen which the water can contain is also temperature dependent. Oxygen is more soluble in cold water than in warm water, hence the reduction of oxygen concentrations by pollution is especially serious during periods of high temperature when oxygen levels are already low. Increased temperatures also accelerate biological activity including that of the oxygen-utilizing bacteria which decompose organic wastes. These pollutional effects may be especially serious when low flow conditions coincide with high temperatures. Summary temperature data of water are essential for planning multiple uses of water.

Turbidity

Turbidity is the optical property of a suspension with reference to the extent to which the penetration of light is inhibited by the presence of insoluble material. Turbidity is a function on both the concentration and particle size of the suspended material. Although it is reported in terms of parts per million of silica, it is only partly synonymous with the weight of sediment per unit volume of water.

Turbid water is abrasive in pipes, pumps, and turbine blades. In process water, turbidities much more than 1 ppm are not tolerated by several industries, but others permit up to 50 ppm or higher (Rainwater, Thatcher, 1960, p. 289). Although turbidity does not directly measure the safety of drinking water, it is related to the consumers acceptance of the water. A level of 5 units of turbidity becomes objectionable to a considerable number of people (U.S. Public Health, 1962).

Sediment

Fluvial sediment is generally regarded as that sediment which is transported by, suspended in, or deposited by water. Suspended sediment is that part which remains in suspension in water owing to the upward components of turbulent currents or by colloidal suspension. Much fluvial sediment results from the natural process of erosion, which in turn is part of the geologic cycle of rock transformation. This natural process may be accelerated by agricultural practices. Sediment is also contributed by a number of industrial and construction activities. In certain sections, waste materials from mining, logging, oil-field, and other industrial operations introduce large quantities of suspended as well as dissolved material.

The quantity of sediment, transported or available for transportation, is affected by climatic conditions, form or nature of precipitation, character of the solid mantle, plant cover, topography, and land use. The mode and rate of sediment erosion, transport, and deposition is determined largely by the size distribution of the particles or more precisely by the fall velocities of the particles in water. Sediment particles in the sandsize (larger than 0.062 mm) range do not appear to be affected by flocculation or dispersion resulting from the mineral constituents in solution. In contrast, the sedimentation diameter of clay and silt particles in suspension may vary considerably from point to point in a stream or reservoir, depending on the mineral matter in solution and in suspension and the degree of turbulence present. The size of sediment particles in transport at any point depends on the type of erodible and soluble material in the drainage area, the degree of flocculation present, time in transport, and characteristics of the transporting flow. The flow characteristics include velocity of water, turbulence, and the depth, width, and roughness of the channel. As a result of these variable characteristics, the size of particles transported, as well as the total sediment load, is in constant adjustment with the characteristics and physical features of the stream and drainage area.

STREAMFLOW

Most of the records of stream discharge, used in conjunction with the chemical analyses and in the computation of sediment loads in this volume, are published in The Geological Survey water-supply paper series, "Surface Water Supply of the United States, 1961-65." The discharge reported for a composite sample is usually the average of daily mean discharges for the composite period. The discharges reported in the tables of single analyses are either daily mean discharges or discharges obtained at the time samples were collected and computed from a stage-discharge relation or from a discharge measurement.

The water-supply papers and numbers which contain more complete records of stream discharge for this report are listed below:

Part 3				Part 4	
Volume No.	WSP	Volume No.	WSP	Volume No.	WSP
Volume 1	1907	Volume 3	1909	Volume 1	1911
Volume 2	1908	Volume 4	1910	Volume 2	1912

PUBLICATIONS

Reports giving records of chemical quality and temperatures of surface waters and suspended-sediment loads of streams in the area covered by this volume for the water years 1941-64, are listed below:

Numbers of water-supply papers containing records for Parts 3 and 4, 1941-65

Year	WSP	Year	WSP	Year	WSP	Year	WSP
1941	942	1948	1132	1955	1400	1962	1942
1942	950	1949	1162	1956	1450	1963	1944
1943	970	1950	1186	1957	1520	1964	1955
1944	1022	1951	1197	1958	1571	1965	1962
1945	1030	1952	1250	1959	1642	----	----
1946	1050	1953	1290	1960	1742	----	----
1947	1102	1954	1350	1961	1882	----	----

Geological Survey reports containing chemical quality, temperature, and sediment data obtained before 1941 are listed below. Publications dealing largely with the quality of ground-water supplies and only incidentally covering the chemical composition of surface waters are not included. Publications that are out of print are preceded by an asterisk.

PROFESSIONAL PAPER

*135. Composition of river and lake waters of the United States, 1924.

BULLETINS

*479. The geochemical interpretation of water analyses, 1911.
770. The data of geochemistry, 1924.

WATER-SUPPLY PAPERS

*108. Quality of water in the Susquehanna River drainage basin, with an introductory chapter on physiographic features. 1904.
*161. Quality of water in the upper Ohio River basin and at Erie, Pa., 1906.
*193. The quality of surface waters in Minnesota, 1907.
*236. The quality of surface waters in the United States, Part 1, Analyses of waters east of the one hundredth meridian, 1909.
*237. The quality of the surface waters of California, 1910.
*239. The quality of surface waters of Illinois, 1910.
*273. Quality of the water supplies of Kansas, with a preliminary report on stream pollution by mine waters in southeastern Kansas, 1911.
*274. Some stream waters of the western United States, with chapters on sediment carried by the Rio Grande and the industrial application of water analyses, 1911.
*339. Quality of the surface waters of Washington, 1914.
*363. Quality of the surface waters of Oregon, 1914.
*418. Mineral springs of Alaska, with a chapter on the chemical character of some surface waters of Alaska, 1917.
*596-B. Quality of water of Colorado River in 1925-26, 1928.
*596-D. Quality of water of Pecos River in Texas, 1928.
*596-E. Quality of the surface waters of New Jersey, 1928.
*636-A. Quality of water of the Colorado River in 1926-28, 1930.
*636-B. Suspended matter in the Colorado River in 1925-28, 1930.
*638-D. Quality of water of the Colorado River in 1928-30, 1932.
*839 Quality of water of the Rio Grande basin above Fort Quitman, Tex., 1938.
*889-E. Chemical character of surface water of Georgia, 1944.
*998. Suspended sediment in the Colorado River, 1925-41, 1947.
1048. Discharge and sediment loads in the Boise River drainage basin, Idaho, 1939-40, 1948.
1110-C. Quality of water of Conchas Reservoir, New Mexico, 1939-49, 1952.

Many of the reports listed are available for consultation in the larger public and institutional libaries. Copies of Geological Survey publications still in print may be purchased at a nominal cost from the Superintendent of Documents, Government Printing Office, Washington D.C. 20402, who will, upon request, furnish lists giving prices.

COOPERATION

Many Municipal, State, and Federal agencies assisted in collecting records for these quality-of-water investigations. In addition to the cooperative programs, many stations were operated from funds appropriated directly to the Geological Survey. The table on page lists State and local agencies that cooperated in quality-of-water investigations included in this volume, and the locations of district offices responsible for the data collected.

DIVISION OF WORK

The quality-of-water program was conducted by the Water Resources Division of the Geological Survey, E. L. Hendricks, chief hydrologist, and G. W. Whetstone, assistant chief for Reports and Data Processing, under the general direction of G. A. Billingsley, chief, Reports Section, and B. A. Anderson, chief, Data Reports Unit. The data were collected and prepared for publication under the supervision of district chiefs as follows: In Alabama, W. L. Broadhurst; Georgia, A. N. Cameron; Illinois, Indiana, Kentucky, Michigan, and Ohio, J. J. Molloy with W. D. Mitchell in Illinois, M. D. Hale in Indiana, F. F. Schrader in Kentucky, and A. D. Ash, in Michigan; Maryland, J. W. Wark; Minnesota, D. B. Anderson; New York, R. C. Heath; North Carolina and Virginia, E. B. Rice with J. W. Gambrell in Virginia; Pennsylvania, N. H. Beamer; Tennessee, J. S. Cragwell; West Virginia, W. C. Griffin; and in Wisconsin, K. B. Young.

Correspondence regarding the records in this report or any additional information should be directed to the district chief of the appropriate Geological Survey--Water Resources Division offices indicated in the table on page 29. Because of reorganization in recent years, the offices now administering water-quality programs in most of the States differ from those that were administering the programs in 1965.

State	Cooperating agency	Drainage basin	District office
Alabama	Geological Survey of Alabama, P. E. LaMoreaux, State geologist. Tennessee Valley Authority.	Ohio River	Box V University, Ala. 35486
Georgia	Georgia Department of Mines, Mining and Geology, Garland Peyton, director, succeeded by Dr. A. S. Furcron. Tennessee Valley Authority.		Room 164 Peachtree-Seventh Bldg. Atlanta, Ga. 30323
Illinois	Illinois State Department of Public Works and Buildings, F. S. Lorenz, director, through the Division of Waterways, J. C. Guillou, chief of waterways engineer. Ohio River Valley Water Sanitation Commission, E. J. Cleary, executive director and chief engineer.		605 South Neil St. Champaign, Ill. 61820
Indiana	Indiana Department of Natural Resources, J. E. Mitchell, director, through Bureau of Water and Mineral Resources, W. J. Andrews, deputy director.		Room 516 611 N. Park Ave. Indianapolis, Ind. 46204

State	Cooperating agency	Drainage basin	District office
Indiana	Indiana Board of Health, A. C. Offutt, commissioner, and B. A. Poole, director, Bureau of Environmental Sanitation. Indiana State Highway Commission, R. S. Whitehead, chairman, M. L. Hayes, executive director, F. L. Ashbaucher, chief engineer. Ohio River Valley Water Sanitation Commission, E. J. Cleary, executive director and chief engineer.	Ohio River	Room 516 611 N. Park Ave. Indianapolis, Ind. 46204
Kentucky	University of Kentucky, Dr. J. W. Oswald, president, through State Geologist, W. W. Hagan, director and State geologist. Ohio River Valley Water Sanitation Commission, E. J. Cleary, executive director and chief engineer.		Room 310 Center Bldg. 522 W. Jefferson St. Louisville, Ky. 40202
Maryland	Maryland Geological Survey, K. N. Weaver, director.		724 York Rd. Towson, Md. 21204

State	Cooperating agency	Drainage basin	District office
Michigan	Michigan State Water Resources Commission, L. F. Oeming, executive secretary. Michigan State Department of Conservation, R. A. MacMullen, director; G. A. Walker, deputy director.	St. Lawrence River	Room 700 Capitol Savings and Loan Bldg. Lansing, Mich. 48933
Minnesota	Minnesota Department of Conservation; Division of Waters, S. A. Frellsen, director.		1002 Post Office Bldg. St. Paul, Minn. 55101
New York	New York State Department of Commerce; Bureau of Industrial Development, Henry Gallien, director. New York State Department of Conservation; Division of Water Resources, F. W. Montanari, assistant commissioner.	Ohio River, St. Lawrence River	P. O. Box 948 Federal Bldg. Albany, N.Y. 12201
North Carolina	North Carolina Department of Water Resources, W. E. Fuller, director.	Ohio River	P. O. Box 2357 Raleigh, N.C. 27602

State	Cooperating agency	Drainage basin	District office
Ohio	Ohio Department of Natural Resources, F. E. Morr, director, and C. V. Youngquist, chief, Division of Water. Ohio Department of Health, Dr. E. W. Arnold, director, and G. H. Eagle, chief engineer. Miami Conservation District, M. L. Mitchell, chief engineer. Ohio River Valley Water Sanitation Commission, E. J. Cleary, executive director and chief engineer.	Ohio River	975 West Third St. Columbus, Ohio 43212
Pennsylvania	Pennsylvania Department of Agriculture, Dr. W. L. Henning, secretary. Pennsylvania Department of Forests and Waters, M. K. Goddard, secretary.	Ohio River, St. Lawrence River	Federal Bldg. Third and Walnut Sts. Harrisburg, Pa. 17108
Tennessee	Tennessee Department of Conservation, D. M. McSween, commissioner, through Division of Water Resources, R. W. Robinson, director.	Ohio River	Room 144 Federal Office Bldg. Nashville, Tenn. 37203

State	Cooperating agency	Drainage basin	District office
Virginia		Ohio River	200 West Grace St. Richmond, Va. 23220
West Virginia	West Virginia Department of Natural Resources, R. P. McDonough, director. Ohio River Valley Water Sanitation Commission, E. J. Cleary, executive director and chief engineer.		3303 New Federal Office Bldg. 500 Quarrier St. Charleston, W. Va. 25301
Wisconsin	Wisconsin Conservation Department, L. P. Voight, director, through the Committee on Water Pollution, T. F. Wisniewski, director.	St. Lawrence River	Room 200 1815 University Ave. Madison, Wis. 53706

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WATER-QUALITY STATIONS IN DOWNSTREAM ORDER

PART 3. OHIO RIVER BASIN

OHIO RIVER MAIN STEM

3-125. ALLEGHENY RIVER NEAR KINZUA, PA.

(Formerly published as 3-126. Allegheny River at Warren)

LOCATION.--At bridge on U.S. Highway 6, Warren County, approximately 9.5 miles downstream from gaging station near Kinzua.
DRAINAGE AREA.--2,223 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1951, October 1961 to September 1965.
Water temperatures: October 1948 to September 1951, October 1961 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 780 micromhos Nov. 2; minimum daily, 84 micromhos Jan. 12.
Water temperatures: Maximum, 76°F Aug. 17-19; minimum, freezing point Jan. 7, 14, and Mar. 2.
EXTREMES, 1948-51, 1961-65.--Dissolved solids (1948-49): Maximum, 573 ppm Sept. 11-20, 1949; minimum, 100 ppm Apr. 11-20, 1949.
Hardness (1948-51): Maximum, 180 ppm Oct. 1-10, 1948; minimum, 27 ppm Mar. 1-10, 1951.
Specific conductance: Maximum daily, 1,110 micromhos Oct. 13, 1948; minimum daily, 43 micromhos Jan. 22, 1962.
Water temperatures: Maximum, 84°F July 13, 14, 1949; minimum, freezing point on many days during winter months.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 1-10, 1964	269	--		--	--	--	--	A78	--	90	20	155	--	1.8	383	146	72		696	7.7	7
Nov. 1-10......	237	--		--	--	--	--	A77	--	95	20	160	--	.6	400	158	80		721	7.4	3
Dec. 1-10......	680	--		--	--	--	--	A41	--	54	20	84	--	1.6	234	96	52		411	7.2	8
Jan. 1-10, 1965	5630	--		--	--	--	--	A14	--	26	16	26	--	1.3	100	46	25		170	6.4	3
Feb. 1-10......	4420	--		--	--	--	--	A17	--	32	15	31	--	2.2	112	51	25		196	7.1	5
Mar. 1-10......	6180	--		--	--	--	--	A12	--	25	13	20	--	1.9	86	38	18		146	7.1	7
Apr. 1-3, 9-10.	8680	--		--	--	--	--	A11	--	20	14	18	--	1.5	60	34	18		128	6.6	3
May 3-10.......	6630	--		--	--	--	--	A11	--	27	15	18	--	1.1	93	40	18		142	6.5	4
June 1-10......	2430	--		--	--	--	--	A21	--	46	15	36	--	1.5	135	59	22		221	7.2	5
July 1-10......	393	--		--	--	33	6.3	A43	--	74	17	88	--	.5	240	108	48		446	7.0	4
Aug. 1-10......	608	4.0		0.00	0.00	34	5.4	46	1.9	67	18	97	0.1	1.1	260	106	52		473	7.0	6
Sept. 1-10.....	799	2.8		.00	.01	31	5.4	45	1.7	62	19	94	.0	1.0	252	100	49		449	7.1	6
Analyses of additional samples																					
Oct. 8, 1964B..	C255							A125		73	18	276		0.6	--	196	136		1060	7.2	6
Oct. 8D........	C255							A75		99	21	156		.5	--	160	79		745	7.7	8
Oct. 8E........	C255							A66		104	23	128		.6	--	146	61		645	7.1	3
Nov. 5.........	C287							A76		100	23	152		.4	391	156	74		695	7.4	5
Jan. 13, 1965..	6820							A9.7		21	15	16		2.2	79	36	19		130	6.6	6
Feb. 18........	8400							A10		24	14	16		.8	78	35	16		126	6.8	8
Mar. 25........	2400							A20		40	15	37		.5	124	57	24		221	7.0	5
Apr. 29........	6200							A11		27	14	18		1.3	81	40	18		142	6.6	5
June 23........	660							A35		70	17	66		.1	217	92	35		361	8.0	5

A Calculated Na plus K, reported as Na.
B Left side.
C Discharge at time of sampling.
D Center.
E Right side.

OHIO RIVER MAIN STEM--Continued

3-125. ALLEGHENY RIVER NEAR KINZUA, PA.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	675	748	413	181	184	169	155	146	301	427	416	490
2......	698	780	458	183	187	180	147	144	307	443	423	490
3......	697	778	460	183	204	173	153	149	170	433	541	329
4......	693	757	478	187	211	170	--	158	203	431	389	435
5......	704	701	429	188	218	170	--	155	192	456	492	436
6......	694	693	314	203	232	119	--	160	179	460	546	440
7......	687	676	347	211	243	111	--	151	197	467	--	522
8......	668	678	411	122	215	114	--	122	207	510	--	496
9......	699	723	402	121	157	118	93	125	208	447	--	434
10......	754	703	442	123	114	127	86	114	227	409	505	428
11......	771	699	433	104	100	150	87	108	200	410	454	426
12......	731	725	433	84	92	146	90	111	218	411	439	472
13......	721	725	157	126	88	158	91	116	218	414	437	445
14......	710	714	156	137	87	158	94	124	221	459	466	454
15......	706	683	164	159	92	160	100	131	263	458	486	516
16......	724	679	164	176	96	180	107	161	280	475	475	544
17......	732	690	182	183	105	181	106	159	290	481	454	579
18......	745	704	196	195	121	184	114	166	307	481	457	490
19......	742	718	206	211	138	195	110	170	332	545	524	492
20......	752	680	235	215	157	198	110	181	351	483	570	490
21......	742	660	235	221	156	198	112	185	347	485	533	481
22......	740	719	244	223	157	200	118	204	350	111	495	510
23......	730	658	258	224	204	209	120	204	366	535	498	515
24......	738	689	264	217	211	206	126	210	355	541	501	512
25......	737	665	235	217	225	203	129	230	349	479	527	534
26......	730	679	179	226	201	230	139	237	349	403	554	537
27......	737	556	158	193	192	228	135	242	348	503	566	524
28......	741	433	159	132	192	230	134	248	414	521	564	510
29......	741	516	157	--	--	235	131	264	390	566	583	512
30......	751	507	159	184	--	202	137	290	391	455	585	586
31......	733	--	--	181	--	180	--	290	--	416	568	--
Average	723	677	284	177	163	176	116	175	284	455	501	487

OHIO RIVER MAIN STEM--Continued

3-125. ALLEGHENY RIVER NEAR KINZUA, PA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	55	58	58	57	55	52	48	47	51	43	43	43	44	42	42	46	50	50	53	--	48	47	47	46	45	45	45	48	--	47	46	48
November	45	45	47	45	48	46	46	46	44	44	43	46	50	49	48	50	47	45	43	42	38	36	33	33	34	41	40	41	40	39	--	43
December	35	34	34	35	35	34	33	33	33	33	33	33	36	36	34	34	36	34	33	35	34	34	33	35	36	43	40	36	35	35	--	35
January	35	34	--	33	33	34	32	36	36	34	34	35	35	32	33	33	33	34	33	34	34	34	35	33	33	34	33	33	--	33	33	34
February	33	33	33	33	33	34	34	35	33	34	34	35	36	36	35	34	34	34	34	33	34	34	33	34	34	34	34	34	--	--	--	34
March	33	32	34	34	34	35	36	37	37	37	36	36	35	35	35	36	--	36	--	36	36	34	34	34	34	35	35	34	36	34	36	35
April	37	37	37	--	--	--	--	--	--	42	42	45	45	45	44	44	44	40	40	40	43	44	42	44	45	46	45	44	44	46	--	--
May	48	48	52	56	59	56	59	59	59	59	60	60	59	57	57	60	60	57	58	58	60	62	62	62	64	64	68	68	64	58	58	59
June	60	64	56	56	61	61	66	69	69	69	67	68	68	68	65	66	63	62	62	65	--	68	68	68	66	66	--	68	74	74	--	66
July	70	68	72	--	--	70	70	71	70	72	70	69	71	74	74	72	70	70	70	68	66	67	68	68	70	70	72	69	68	66	68	70
August	68	68	62	64	63	65	69	70	71	74	70	70	70	70	72	72	76	76	76	74	72	70	70	68	66	68	68	72	64	64	64	69
September	63	62	65	64	65	64	66	68	70	70	70	67	67	68	66	64	64	66	69	--	71	73	74	71	66	66	60	58	57	60	--	66

FRENCH CREEK BASIN

3-240. FRENCH CREEK AT UTICA, PA.

LOCATION.--At gaging station on right bank at upstream side of bridge on State Highway 964 at Utica, Venango County, 0.3 mile upstream from Mill Creek.
DRAINAGE AREA.--1,028 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1961 to September 1965.
REMARKS.--Sodium (Na) and potassium (K) values are calculated and reported as sodium.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 27, 1964A	359							10		131	27	12		0.0	--	130	23		295	7.0	5
Oct. 27B	359							8.0		115	26	10		.9	--	118	24		270	7.5	4
Dec. 15	7280							4.8		38	22	6.0		2.6	88	54	23		137	6.8	18
Jan. 19, 1965	1170							6.2		72	26	8.0		4.0	129	87	28		205	7.3	9
Feb. 16	2000							5.5		56	22	8.0		3.2	111	71	25		171	7.2	8
Mar. 30	4290							4.4		45	22	8.2		2.3	95	64	27		153	6.8	10
Apr. 26	2820							5.1		51	21	6.6		2.1	96	64	22		152	6.8	15
June 2	744							6.5		93	21	9.2		2.1	143	94	16		227	7.2	15
Sept. 14	249							11		110	30	11		1.6	--	115	25		274	7.5	5

A Left side.
B Right side.

CLARION RIVER BASIN

3-294. TOMS RUN AT COOKSBURG, PA.

LOCATION.--At gaging station on right bank, about 100 feet downstream from footbridge on Longfellow Trail, 0.5 mile upstream from mouth, and 0.5 mile northwest of Cooksburg, Forest County.
DRAINAGE AREA.--12.6 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1964 to September 1965.
REMARKS.--Sodium (Na) and potassium (K) values are calculated and reported as sodium.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$ Calcium, magnesium	Hardness as $CaCO_3$ Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 5, 1964...	1.2							20		34	57	10		0.1	145	59	31		232	6.8	4
Nov. 3.........	.9							27		49	67	12		.0	179	68	28		274	7.1	5
Dec. 11........	20							8.7		9	39	5.5		1.2	77	38	31		128	6.3	3
Feb. 4, 1965...	11							4.6		6	20	3.5		1.0	53	22	17		75	6.6	5
Feb. 15........	37							4.8		8	19	2.5		.5	45	20	14		69	6.1	4
Mar. 23........	20							4.1		4	28	2.5		.2	51	27	24		87	5.8	2
Apr. 22........	34							4.6		4	22	3.7		.5	45	22	19		73	5.8	5
May 28.........	7.0							6.7		9	26	5.0		.2	66	27	20		92	6.2	10
June 24........	3.8							12		16	39	6.0		.1	91	37	24		134	7.2	3
Sept. 16.......	1.3							22		30	62	12		1.4	--	59	35		232	6.7	5

CLARION RIVER BASIN--Continued

3-295. CLARION RIVER AT COOKSBURG, PA.

LOCATION.--At gaging station on left bank at downstream side of bridge on State Highway 36 at Cooksburg, Forest County, 300 feet downstream from Toms Run, and 5 miles upstream from Canther Run.
DRAINAGE AREA.--807 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1962 to September 1965.
REMARKS.--Sodium (Na) and potassium (K) values are calculated and reported as sodium.

Chemical analyses, in parts per million, October 1964 to August 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
																Calcium, magnesium	Noncarbonate				
Oct. 5, 1964...	254							19		24	69	46		1.0	233	116	97		361	6.5	18
Nov. 3.........	177							28		57	79	59		.8	344	152	106		462	6.6	45
Dec. 30........	1610							7.1		9	38	12		.7	101	49	42		148	6.1	7
Feb. 15, 1965..	3000							6.7		12	32	6.0		.5	76	38	28		117	7.1	8
Mar. 22........	1030							11		20	42	16		.6	126	60	44		189	6.6	20
Apr. 22........	2610							6.4		6	35	8.5		.5	79	40	35		122	5.9	15
May 24.........	738							8.7		10	49	19		1.0	130	68	60		198	6.8	15
July 6.........	340							18		11	74	28		.9	182	87	78		281	7.0	10
Aug. 26........	326							14		18	54	28		.7	--	80	65		260	6.4	10

OHIO RIVER MAIN STEM

3-365. ALLEGHENY RIVER AT KITTANNING, PA.

LOCATION.--At center of bridge on U.S. Highway 422 at Kittanning, Armstrong County, 2,500 feet downstream from gaging station.
DRAINAGE AREA.--8,973 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1944 to June 1953, October 1956 to September 1965.
Water temperatures: October 1944 to June 1953, October 1956 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 465 micromhos Nov. 25; minimum daily, 115 micromhos Feb. 15.
Water temperatures: Maximum, 78°F July 17-19, 25; minimum, 33°F Jan. 18-20 and Feb. 2-4.
EXTREMES, 1944-53, 1956-65.--Dissolved solids (1944-47, 1958-59): Maximum, 304 ppm Oct. 11-20, 1946; minimum, 63 ppm Mar. 1-10, 1945.
Hardness (1944-47, 1949-53, 1956-59): Maximum, 148 ppm Sept. 11-20, 1952; minimum, 34 ppm Feb. 21-28 and Mar. 1-10, 1951.
Specific conductance: Maximum daily, 580 micromhos Oct. 18, 1946; minimum daily, 76 micromhos Apr. 8, 9, 1947.
Water temperatures: Maximum, 86°F July 31 and Aug. 4, 1957; minimum, freezing point on many days during winter months.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Snlfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 1-10, 1964	1610	2.2		0.00	0.00	33	9.7	24	1.5	60	67	37	0.2	0.4	226	123	74		378	7.4	8
Nov. 1-10......	1480	2.4		.02	.00	37	9.7	28	2.0	74	69	46	.2	.4	248	133	72		420	7.3	3
Dec. 1-10......	10040	4.7		.00	.00	22	6.3	14	1.8	40	43	24	.1	1.6	153	81	48		253	6.8	3
Jan. 1-10, 1965	29300	5.5		.00	.00	17	6.3	6.4	.2	18	53	11	.1	2.0	112	69	54		186	6.1	3
Feb. 1-10......	21900	5.5		.06	.34	18	6.1	7.8	1.0	20	52	12	.1	2.4	122	70	54		200	6.9	4
Mar. 1-10......	37900	4.7		.01	.00	16	4.1	6.4	.0	18	39	12	.1	2.0	105	57	42		163	6.7	4
Apr. 1-9.......	27170	--		--	--	--	--	A8.7	--	19	42	15	--	1.3	117	62	47		169	6.8	2
May 1-10.......	17700	--		--	--	--	--	A9.9	--	30	34	13	--	1.2	110	58	34		172	6.7	1
June 1-10......	8450	--		--	--	--	--	A14	--	44	40	20	--	1.2	133	76	40		222	7.3	5
July 1-10......	2360	--		--	--	28	6.6	A20	--	56	53	28	--	.3	171	98	51		295	6.6	4
Aug. 1-10......	2280	--		--	--	32	8.8	A23	--	54	66	38	--	.0	207	116	72		352	6.9	1
Sept. 1-10.....	4980	5.2		.01	.19	32	8.8	15	1.9	31	82	32	.2	.8	217	116	91		352	6.0	3

A Calculated Na plus K, reported as Na.

OHIO RIVER MAIN STEM--Continued

3-365. ALLEGHENY RIVER AT KITTANNING, PA.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	367	416	276	198	167	192	179	169	238	289	349	378
2......	376	417	274	184	175	185	168	174	244	291	346	382
3......	380	421	262	186	194	189	165	162	249	291	347	374
4......	386	421	261	179	203	181	162	168	239	290	348	343
5......	390	422	251	175	209	183	168	187	244	313	340	353
6......	384	425	280	176	207	164	174	172	226	301	346	343
7......	376	423	251	205	216	138	175	174	209	298	353	332
8......	372	424	229	188	224	135	170	183	195	299	367	339
9......	377	422	233	212	214	126	151	164	200	298	374	340
10......	389	420	219	178	209	136	125	152	212	302	384	336
11......	391	423	227	143	152	141	122	144	222	302	382	340
12......	391	459	239	133	126	148	122	151	212	299	374	341
13......	389	446	272	136	130	155	121	143	202	299	--	340
14......	388	430	195	144	117	163	128	138	210	317	367	341
15......	389	430	159	155	115	178	132	145	212	327	361	344
16......	395	426	156	171	116	192	132	147	209	322	358	355
17......	398	422	171	157	119	199	149	143	203	324	348	361
18......	401	418	180	178	125	189	155	151	208	325	339	373
19......	397	420	181	185	133	192	151	168	208	323	342	376
20......	393	421	168	208	145	206	149	162	217	329	346	370
21......	390	428	181	210	163	210	145	166	231	328	350	369
22......	387	428	178	231	155	197	146	184	229	329	354	375
23......	393	429	195	234	178	195	145	180	240	330	366	388
24......	388	437	216	204	191	204	152	183	248	336	364	396
25......	393	465	205	193	200	209	154	192	258	342	364	395
26......	396	440	228	171	208	206	163	198	259	346	368	402
27......	397	414	189	163	228	205	169	200	256	345	374	385
28......	399	378	170	162	211	207	165	218	273	342	379	387
29......	402	360	166	152	--	214	155	212	280	347	384	381
30......	406	315	174	158	--	213	170	220	290	352	386	380
31......	412	--	176	166	--	182	--	233	--	354	385	--
Average	390	420	211	178	172	181	152	173	230	319	361	363

OHIO RIVER MAIN STEM--Continued

3-365. ALLEGHENY RIVER AT KITTANNING, PA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	--	64	63	63	63	61	60	59	59	58	57	56	56	56	65	57	56	56	56	56	55	55	54	54	54	54	54	54	55	55	55	57
November	55	55	54	54	54	54	53	53	53	53	53	53	54	54	54	53	53	53	53	52	50	47	47	46	46	46	45	46	44	44	--	51
December	42	41	39	39	39	37	37	37	36	35	36	35	36	36	36	36	35	35	35	36	34	34	34	35	35	37	37	38	40	39	39	37
January	39	40	37	38	38	37	37	38	--	38	39	38	37	36	36	35	35	33	33	33	34	--	35	35	34	34	34	34	34	34	34	36
February	34	33	33	33	34	34	34	34	34	34	34	38	37	37	35	--	37	37	36	35	35	34	34	34	35	34	35	36	--	--	--	35
March	35	35	--	34	35	36	--	36	36	36	36	36	38	38	36	37	38	38	38	38	37	36	37	36	36	38	36	36	38	38	38	37
April	39	40	41	--	41	41	42	43	44	45	46	45	48	48	47	46	46	46	45	47	46	46	48	47	47	47	47	48	48	50	--	45
May	48	48	50	48	49	50	55	62	63	62	63	63	63	64	64	64	64	63	64	64	64	65	65	65	65	66	66	65	65	66	65	61
June	66	67	67	68	67	66	68	68	68	69	72	72	72	71	72	72	71	70	70	70	71	71	71	72	72	72	72	73	74	74	--	70
July	74	73	74	74	75	74	74	75	75	75	76	74	75	75	76	77	78	78	78	76	--	75	76	77	78	77	77	77	77	76	77	76
August	76	76	76	75	75	76	76	76	76	75	75	75	--	75	76	76	76	75	75	76	76	--	75	76	76	76	75	76	76	75	74	76
September	74	74	74	75	73	72	70	70	72	72	72	73	72	71	72	71	71	71	72	73	72	73	73	74	71	72	72	71	71	70	--	72

KISKIMINETAS RIVER BASIN

3-415. CONEMAUGH RIVER AT SEWARD, PA.

LOCATION.--Temperature recorder at gaging station on left bank at highway bridge on State Highway 56 at Seward, Westmoreland County, 2 miles downstream from Findley Run, and 9 miles northwest of Johnstown.
DRAINAGE AREA.--715 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 88°F Aug. 16; minimum, freezing point on several days in January and February.
EXTREMES, 1962-65.--Water temperatures: Maximum, 88°F Aug. 16, 1965; minimum, freezing point on many days during 1962-65.
REMARKS.--Recorder stopped Jan. 15-17. Recorder stopped Sept. 3-6; range in temperature 69°F to 81°F. Records furnished by Pennsylvania Electric Company.

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	66	70	71	70	66	63	64	63	63	60	61	62	65	66	67	67	69	68	68	62	60	60	60	60	61	65	65	66	66	66	62	65
Minimum	62	65	68	66	63	62	59	59	61	56	54	56	62	64	62	64	67	66	62	60	57	58	58	58	58	60	61	62	66	62	60	61
November																																
Maximum	62	62	64	64	62	59	60	60	61	62	63	65	65	62	62	65	63	57	57	56	50	45	50	52	54	53	49	51	51	48	--	58
Minimum	57	59	59	60	59	58	58	58	60	60	61	61	63	59	58	62	57	56	55	51	42	41	44	48	51	46	46	48	48	40	--	54
December																																
Maximum	43	46	48	49	49	46	42	44	45	44	47	47	45	44	42	40	42	42	39	40	40	43	43	46	46	46	46	42	43	46	46	44
Minimum	40	42	46	48	46	42	41	42	44	40	44	44	44	42	38	36	40	36	36	39	40	40	41	43	44	44	42	41	40	43	42	42
January																																
Maximum	42	41	40	37	39	41	40	44	44	42	40	39	39	39	--	--	--	35	38	38	41	43	42	39	39	41	41	36	35	34	33	39
Minimum	41	40	37	36	36	40	38	41	43	39	38	38	39	35	--	--	--	33	34	36	37	39	37	36	38	38	36	35	32	32	32	37
February																																
Maximum	34	34	32	34	39	42	40	40	40	42	44	46	45	39	40	42	43	43	41	38	41	39	39	41	40	34	38	44	--	--	--	40
Minimum	32	33	32	32	32	39	34	35	40	40	42	44	40	37	36	38	41	42	36	33	37	34	33	35	35	32	32	37	--	--	--	36
March																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
April																																
Maximum	44	44	45	46	50	50	50	54	54	51	51	53	52	52	51	49	51	51	53	55	56	60	60	55	52	55	54	53	57	60	--	52
Minimum	39	42	39	41	42	48	47	49	49	47	49	52	46	44	49	46	45	50	49	52	52	56	56	52	50	50	52	50	52	54	--	48
May																																
Maximum	60	66	68	69	68	68	70	70	72	72	70	68	68	68	70	71	70	70	72	72	70	70	72	72	74	77	76	74	72	66	69	70
Minimum	58	58	63	64	64	62	66	65	66	69	68	64	63	63	64	68	66	64	67	68	64	64	69	69	69	73	73	70	66	66	64	66
June																																
Maximum	75	75	74	74	75	80	80	80	80	80	79	80	79	76	76	70	70	68	73	77	78	80	80	80	78	78	80	82	82	82	--	77
Minimum	68	72	71	68	68	72	76	77	76	76	74	75	74	71	70	68	68	66	68	71	75	76	78	76	73	72	74	77	80	78	--	73
July																																
Maximum	81	81	81	83	82	84	83	81	83	84	84	84	84	84	86	83	83	83	80	80	80	80	78	82	82	82	82	80	80	82	80	82
Minimum	74	74	79	78	80	79	77	78	79	80	79	78	78	80	82	78	79	80	78	74	74	76	75	78	80	77	78	76	75	74	75	77
August																																
Maximum	79	75	76	77	84	83	86	84	80	79	80	82	80	84	87	88	87	86	84	82	78	80	81	80	80	82	83	80	72	75	75	81
Minimum	74	73	71	72	74	78	73	73	75	75	73	74	76	77	78	82	82	82	78	74	73	75	76	72	74	73	76	58	54	67	70	75
September																																
Maximum	74	72	--	--	--	--	82	81	84	84	82	77	73	79	78	80	82	84	85	84	84	83	80	78	70	71	69	70	74	73	--	78
Minimum	73	70	--	--	--	--	74	76	78	78	78	70	70	72	72	74	74	78	80	79	78	77	76	71	68	64	66	62	65	68	--	73

KISKIMINETAS RIVER BASIN--Continued

3-485. KISKIMINETAS RIVER AT LEECHBURG (VANDERGRIFT), PA.

LOCATION.--At raw-water intake of West Leechburg plant of Allegheny-Ludlum Steel Corp., 0.2 mile below Brady Run, Armstrong County, and 6.7 miles downstream from gaging station at Vandergrift.
DRAINAGE AREA.--1,860 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1951, October 1958 to July 1959, October 1959 to September 1965.
Water temperatures: October 1946 to September 1951, October 1958 to July 1959, November 1959 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 1,930 micromhos Sept. 3; minimum daily, 285 micromhos Apr. 2.
Water temperatures: Maximum, 83°F Aug. 16, 17; minimum, freezing point Feb. 6.
EXTREMES, 1946-51, 1958-65.--Dissolved solids (1946-47, 1959-62): Maximum, 945 ppm Aug. 27 to Sept. 12, 1960; minimum, 141 ppm Mar. 30 to Apr. 8, 1960.
Hardness (1946-47, 1949-51, 1959-62): Maximum, 514 ppm Oct. 1-10, 1946; minimum, 74 ppm Mar. 30 to Apr. 8, 1960.
Specific conductance: Maximum daily, 5,420 micromhos Aug. 12, 1951; minimum daily, 175 micromhos July 22, 1950.
Water temperatures: Maximum, 90°F July 25, 1950; minimum, freezing point on many days during winter months.
REMARKS.--Records of pH of daily samples available in subdistrict office at Philadelphia, Pa. Records of discharge are based on records for Kiskiminetas River at Vandergrift.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 1-10, 1964	607					---	---			0	554	19		1.8	829	400	400	2.2	1320	3.4	3
Nov. 1-10......	366					---	---			0	596	26		4.0	969	465	465	2.2	1520	3.3	4
Dec. 1-4.......	1250					---	---			0	212	14		3.3	341	166	166	.8	572	3.8	3
Dec. 5-7.......	2300					---	---			0	264	16		2.8	400	188	188	1.2	709	3.5	3
Dec. 8-10......	1090					---	---			0	217	14		3.0	334	172	172	.7	559	3.8	3
Jan. 1-10, 1965	6690					---	---			0	130	8.5		3.5	211	106	106	.6	384	3.8	3
Feb. 1, 3, 6-10	3080					---	---			0	223	12		4.0	344	166	166	1.2	627	3.5	3
Mar. 1-10......	5590					---	---			0	164	12		3.2	257	126	126	.8	465	3.7	2
Apr. 1-6, 9-10.	9640					---	---			0	137	8.5		3.3	219	108	108	.8	395	3.8	1
May 1-10.......	1820					---	---			0	237	12		3.0	413	196	196	1.7	716	3.4	2
June 1-10......	880					---	---			0	417	17		1.7	661	295	295	1.9	1010	3.5	3
July 1-10......	409					112	48			0	726	12		1.3	1030	475	475	3.0	1660	3.2	1
Aug. 1-10......	399					132	51			0	778	23		1.2	1110	540	540	2.7	1710	3.2	2
Sept. 1-5, 7-10	409	17	15	3.8	1.0	112	39	52	13	0	693	28	0.4	1.7	993	440	440	3.4	1660	3.1	3

KISKIMINETAS RIVER BASIN--Continued

3-485. KISKIMINETAS RIVER AT LEECHBURG (VANDERGRIFT), PA.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	1490	1490	550	385	517	550	347	574	879	1580	1700	1420
2......	1500	1490	597	390	--	560	285	597	880	1590	1740	1710
3......	1490	1510	592	455	640	557	295	651	920	1550	1750	1930
4......	1290	1510	604	411	--	527	401	699	996	1620	1820	1730
5......	1280	1500	822	286	--	444	399	720	1030	1670	1810	1890
6......	1180	1470	744	338	739	453	460	758	1040	1660	1800	--
7......	1140	1510	622	373	741	402	--	763	1110	1700	1810	1710
8......	1220	1510	571	439	649	399	--	847	1100	1740	1640	1560
9......	1340	1520	556	440	649	336	458	790	1090	1730	1550	1570
10......	1330	1540	581	335	478	383	457	739	1100	1720	1580	1650
11......	1340	1540	623	--	317	397	424	712	1170	1710	1580	1640
12......	1340	1490	625	--	318	409	441	691	1180	1760	--	1570
13......	1350	1550	639	--	347	456	474	689	1290	1790	1610	1560
14......	1390	1550	653	--	379	480	474	681	1280	1730	1560	1880
15......	1420	1530	366	493	430	505	461	685	1430	1720	1590	1880
16......	1480	1530	386	--	488	511	496	749	1430	1630	1620	1770
17......	1440	1450	403	599	542	519	499	740	1350	1680	1530	1650
18......	1510	1480	425	666	600	542	478	801	1440	1580	1520	1590
19......	1500	1480	472	715	626	552	475	835	--	1690	1590	1490
20......	1530	1370	531	--	636	547	462	850	1490	1740	1600	1450
21......	1550	1570	561	--	738	423	445	766	1510	--	1570	1530
22......	1530	1340	643	--	735	433	462	852	1530	1820	1600	--
23......	1510	1240	669	710	803	--	504	843	1540	1830	1680	--
24......	1470	1170	728	424	818	469	542	891	1430	1840	--	--
25......	1520	1170	718	428	699	461	560	--	1420	1860	--	--
26......	1530	1110	720	303	721	340	605	917	1380	1680	--	--
27......	1510	1130	562	292	703	314	--	--	1490	1720	1560	--
28......	1570	1130	568	297	615	327	598	846	1470	1690	1630	1820
29......	1360	794	389	--	--	350	539	868	--	1750	1620	1880
30......	1490	791	310	377	--	--	517	957	1560	1850	--	1840
31......	1490	--	335	438	--	371	--	953	--	1770	1530	--
Average	1420	1380	566	--	597	448	465	774	1270	1710	1640	--

KISKIMINETAS RIVER BASIN--Continued

3-485. KISKIMINETAS RIVER AT LEECHBURG (VANDERGRIFT), PA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	62	62	63	63	63	57	54	54	56	54	53	51	53	53	54	58	57	57	58	53	51	51	51	49	51	52	52	53	54	54	53	55
November	54	55	54	54	53	54	51	52	50	52	54	54	55	54	54	55	53	51	52	50	45	40	41	37	46	46	45	46	45	44	--	50
December	42	38	40	44	44	40	40	41	39	38	38	38	44	43	42	39	40	37	36	39	38	37	41	41	44	43	43	42	44	45	46	41
January	44	46	42	44	41	40	38	43	44	43	--	--	--	--	36	--	33	34	33	--	--	--	36	40	39	42	41	41	--	37	34	--
February	35	--	34	--	--	32	33	36	38	40	40	45	46	45	44	41	40	42	38	37	38	37	36	36	38	37	37	39	--	--	--	39
March	41	41	46	45	41	40	40	40	41	42	40	41	42	44	40	44	44	43	40	41	39	40	44	43	42	44	44	45	46	--	44	42
April	46	42	41	45	46	49	--	--	52	52	51	58	45	53	54	49	49	49	50	54	54	57	59	59	60	58	--	58	56	57	--	52
May	59	64	65	67	68	68	73	73	75	77	73	72	70	68	69	71	70	68	74	68	69	72	72	73	--	75	--	71	70	65	64	70
June	68	69	68	78	70	75	76	77	78	78	76	78	75	74	73	71	68	72	--	74	76	78	79	75	75	76	77	80	--	78	--	75
July	76	76	78	80	79	76	80	78	82	80	79	79	80	82	82	82	82	79	78	74	--	75	74	77	79	79	78	77	75	78	76	78
August	75	74	72	72	72	79	79	79	78	75	75	--	77	79	82	83	83	80	81	78	76	81	78	--	--	--	78	75	70	--	69	77
September	71	68	72	73	75	--	73	75	76	81	75	73	73	73	74	73	78	79	78	80	80	--	--	--	--	--	--	63	68	65	--	--

OHIO RIVER MAIN STEM

3-496.55. ALLEGHENY RIVER AT OAKMONT, PA.

LOCATION.--On left bank at intake line to Ohio River Valley Water Sanitation Commission (ORSANCO) monitor at Oakmont filtration plant, Allegheny County, 0.5 mile upstream from Hulton Road Bridge, and 10.4 miles downstream from gaging station at Natrona.
DRAINAGE AREA.--11,520 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1963 to September 1965.
Water temperatures: July 1963 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 700 micromhos Oct. 8; minimum daily, 156 micromhos Feb. 13.
Water temperatures: Maximum, 84°F July 15-18, Aug. 18, 19; minimum, freezing point on Jan. 17, 21.
EXTREMES, 1963-65.--Specific conductance: Maximum daily, 733 micromhos Nov. 6, 1963; minimum daily, 121 micromhos Mar. 11, 1964.
Water temperatures: Maximum, 85°F July 25, 29, 1964; minimum, freezing point on several days during December 1963, January 1964, and January 1965.
REMARKS.--All values reported for acidity are determined to pH 7.0. Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) minimum daily pH for each month, and (4) maximum daily specific conductance for each 10-day period. Records of discharge are given for Allegheny River at Natrona.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Non-carbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergents (MBAS)
Oct. 1, 1964	2630			--	--	45	14				10	0	168	29	0.3	4.1	--	322	170	162	--	507	6.5		--
Oct. 8......	2270			0.26	5.5	56	21				0	0	257	32	.4	5.7	--	436	226	226	A.6	700	3.8		--
Oct. 11.....	2110			--	--	--	--				--	--	202	--	--	--	0.10	--	--	--	--	566	5.2		0.1
Oct. 27.....	1910			--	--	--	--				--	--	218	--	--	--	.07	--	--	--	--	617	5.7		.1
Nov. 2......	1910			--	--	--	--				--	--	198	--	--	--	.06	--	--	--	--	586	6.0		.1
Nov. 12.....	1830			.34	.43	--	--				--	--	--	--	--	--	--	--	--	--	A.0	591	5.9		--
Nov. 17.....	1910			--	--	56	17				14	0	209	45	.4	5.0	--	408	210	198	--	622	6.2		--
Nov. 24.....	3740			--	--	--	--				--	--	210	--	--	--	.65	--	--	--	--	622	6.6		.1
Nov. 30.....	13000			--	--	43	12				32	0	126	44	.2	2.2	--	296	157	131	--	472	6.5		--
Dec. 1......	10300			--	--	43	11				24	0	126	37	.2	1.9	--	269	152	133	--	429	6.5		--
Dec. 12.....	23400			--	--	--	--				--	--	78	--	--	--	.07	--	--	--	--	282	6.4		.1
Dec. 16.....	38900			--	--	17	5.0				9	0	52	18	.1	2.7	--	122	63	56	--	188	6.1		--
Dec. 26.....	29600			--	--	--	--				--	--	84	--	--	--	.17	--	--	--	--	271	6.0		.1
Dec. 30.....	41400			1.7	.92	--	--				--	--	--	--	--	--	--	--	--	--	A.1	213	5.7		--
Jan. 5, 1965	45800			2.6	1.7	--	--				--	--	80	--	--	--	.10	--	--	--	A.1	241	4.2		.0
Jan. 12.....	56600			--	--	16	3.9				5	0	52	10	.1	2.5	--	108	56	52	--	170	6.5		--
Jan. 20.....	9980			--	--	--	--				--	--	86	--	--	--	.10	--	--	--	--	267	4.5		.1
Jan. 23.....	17200			--	--	27	8.4				1	0	104	14	.1	1.9	--	198	102	101	--	300	4.8		--
Feb. 3......	17200			3.1	.96	--	--				--	--	84	--	--	--	--	--	--	--	A.2	261	4.7		--
Feb. 6......	12200			--	--	28	8.0				1	0	100	16	.1	1.5	--	172	103	102	--	294	4.8		--
Feb. 13.....	76800			--	--	14	4.3				6	0	45	12	.0	2.2	--	84	52	48	--	156	5.8		--
Feb. 20.....	26300			--	--	--	--				--	--	66	--	--	--	.14	--	--	--	--	197	5.7		.0
Feb. 28.....	25700			--	--	--	--				--	--	93	--	--	--	.14	--	--	--	--	283	6.1		.0

Mar. 1, 1965.	28000			--	--	25	8.7				4	0	88	24	.1	2.8	--	170	98	96	--	281	6.4		--
Mar. 9.......	57600			--	--	15	5.1				4	0	52	19	.1	2.6	--	104	58	56	--	173	6.1		--
Mar. 18......	22200			--	--	--	--				--	--	78	--	--	--	.05	--	--	--	--	270	6.1		.0
Mar. 21......	25100			--	--	--	--				--	--	87	--	--	--	.05	--	--	--	--	272	5.0		.0
Mar. 30......	41800			1.9	.83	--	--				0	0	--	--	--	--	--	--	--	--	A.1	250	4.7		--
Apr. 5.......	31000	6.1		3.2	.30	22	8.0				0	0	92	10	.1	2.1	--	152	88	88	.1	270	4.3		--
Apr. 12......	43000			--	--	16	4.6				7	0	52	12	.1	2.1	--	112	59	54	--	170	6.8		--
Apr. 19......	39900			--	--	--	--				--	--	72	--	--	--	.26	--	--	--	--	215	6.3		.0
Apr. 29......	27300			--	--	--	--				--	--	74	--	--	--	.18	--	--	--	--	230	6.6		.0
May 4........	15800			.42	.40	--	--				--	--	--	--	--	--	--	--	--	--	.1	218	6.3		--
May 9........	30500			--	--	--	--				--	--	71	--	--	--	.06	--	--	--	--	236	6.6		.0
May 16.......	17200			--	--	14	6.0				14	0	51	10	.1	1.3	--	114	60	48	--	183	7.0		--
May 20.......	14200			--	--	--	--				--	--	62	--	--	--	.07	--	--	--	--	206	7.0		.0
May 31.......	6130			--	--	27	10				10	0	104	16	.1	1.7	--	194	117	101	--	310	7.0		--
June 1.......	5460			--	--	--	--				--	--	107	--	--	--	.36	--	--	--	--	332	6.2		.0
June 11......	8940			--	--	25	6.6				24	0	61	34	.2	1.3	--	166	90	70	--	260	6.7		--
June 20......	3520			--	--	--	--				--	--	107	--	--	--	.28	--	--	--	--	335	6.1		.0
June 24......	3680			.06	1.6	--	--				--	--	--	--	--	--	--	--	--	--	.1	372	5.5		--
June 25......	3740			--	--	36	11				4	0	133	28	.2	2.8	--	252	135	132	--	383	5.9		--
July 1.......	3470			--	--	33	11				10	0	124	20	.2	2.6	--	234	128	120	--	370	6.7		--
July 10......	3110			--	--	--	--				--	--	153	--	--	--	.11	--	--	--	--	444	6.0		.0
July 11......	3010			--	--	--	--				--	--	167	--	--	--	.07	--	--	--	--	476	5.6		.0
July 30......	1990			.24	3.4	--	--				--	--	--	--	--	--	--	--	--	--	.0	514	5.6		--
July 31......	1830			--	--	47	15				10	0	177	33	.4	4.8	--	331	179	171	--	518	6.6		--
Aug. 6.......	3580			--	--	--	--				--	--	200	--	--	--	.89	--	--	--	--	582	5.7		.0
Aug. 12......	2320			--	--	46	13				12	0	153	36	.3	4.3	--	318	169	159	--	499	6.3		--
Aug. 18......	2340			--	--	--	--				--	--	189	--	--	--	.12	--	--	--	--	564	5.6		.0
Aug. 31......	1350			.08	4.9	60	18				0	0	233	37	.4	6.6	--	426	224	224	.1	677	4.0		--
Sept. 1......	5420			--	--	60	19				0	0	237	38	.5	6.7	--	418	228	228	--	679	4.0		--
Sept. 4......	7580			--	--	40	8.3				26	0	109	42	.2	2.2	--	252	134	113	--	423	6.7		--
Sept. 19.....	2320			.39	4.2	--	--				--	--	216	--	--	--	.10	--	--	--	.2	618	4.0		.0
Sept. 21.....	1690			--	--	--	--				--	--	197	--	--	--	.06	--	--	--	--	574	4.2		.0

A Potential free acidity.

OHIO RIVER MAIN STEM--Continued

3-496.55. ALLEGHENY RIVER AT OAKMONT, PA.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement between 0800 and 0900)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	507	565	429	213	236	281	231	212	332	370	525	679
2......	513	586	378	215	259	250	222	203	329	382	550	530
3......	518	586	350	219	261	245	213	208	326	383	554	425
4......	514	576	331	220	252	248	245	218	323	383	542	423
5......	531	574	331	241	269	224	270	214	280	387	548	428
6......	603	564	308	208	294	199	253	216	278	396	582	461
7......	690	557	328	229	285	182	221	219	293	402	540	461
8......	700	565	331	219	292	179	213	222	302	401	511	461
9......	664	578	302	230	250	173	215	236	286	422	519	453
10......	598	586	280	227	247	189	195	223	276	444	523	455
11......	566	592	267	184	190	208	175	202	260	476	512	452
12......	536	591	282	170	170	213	170	193	288	449	499	449
13......	528	594	262	182	156	212	173	202	266	454	503	457
14......	538	597	254	186	168	215	185	203	276	452	508	463
15......	553	595	222	198	172	224	186	195	286	447	507	459
16......	547	607	188	201	160	231	185	183	295	451	513	453
17......	536	622	192	200	168	237	185	189	307	454	539	494
18......	533	615	196	227	170	270	212	196	307	448	564	568
19......	532	598	199	254	181	242	215	197	326	445	556	618
20......	532	573	208	267	197	264	194	206	335	448	555	597
21......	533	619	226	275	199	272	195	215	335	458	565	574
22......	541	613	218	293	208	259	192	233	341	462	573	555
23......	546	612	232	300	230	264	188	242	348	471	571	544
24......	554	622	231	298	257	272	190	244	372	479	562	528
25......	575	607	244	242	250	--	198	239	383	488	554	514
26......	590	595	271	227	256	262	206	277	372	499	545	510
27......	617	560	254	195	265	255	204	310	376	505	548	502
28......	599	515	228	190	283	232	207	295	372	497	560	512
29......	561	503	214	199	--	232	230	271	361	495	582	511
30......	570	472	213	210	--	250	218	275	361	514	612	511
31......	562	--	208	244	--	237	--	310	--	518	677	--
Average	564	581	263	224	225	234	206	227	319	447	548	501

OHIO RIVER MAIN STEM--Continued

3-496.55. ALLEGHENY RIVER AT OAKMONT, PA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 0800 and 0900)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	70	69	71	70	69	66	66	67	65	64	62	60	60	60	62	65	66	64	62	64	62	61	60	64	58	58	58	59	60	63	59	63
November	55	55	56	56	57	56	57	57	57	56	56	57	62	61	58	58	58	57	56	58	59	58	48	47	47	47	48	46	45	42	--	54
December	41	41	40	42	42	41	39	39	38	38	36	37	39	43	39	39	37	35	35	35	34	34	34	35	36	36	38	40	40	41	41	38
January	41	41	40	40	39	39	39	38	38	40	45	41	40	39	35	35	32	34	39	35	32	35	35	35	36	36	36	37	36	35	35	37
February	35	34	34	35	33	34	35	34	35	38	37	39	39	39	39	37	37	38	39	36	36	36	34	34	35	36	35	35	--	--	--	36
March	35	35	37	37	38	35	34	37	37	37	37	37	37	37	38	39	39	40	39	39	37	38	37	40	40	39	39	39	41	42	42	38
April	43	44	42	43	44	44	--	46	49	51	51	50	50	49	49	48	47	48	46	47	47	48	50	50	51	51	51	51	51	--	--	48
May	51	51	55	58	59	60	61	64	64	65	65	60	65	65	65	66	65	66	67	67	68	68	68	69	70	70	73	75	73	71	70	65
June	70	71	72	72	74	71	72	73	73	73	74	74	75	74	76	74	74	75	75	75	75	75	76	76	75	74	76	74	77	78	--	74
July	78	78	80	79	79	79	79	78	82	82	--	82	82	83	84	84	84	84	82	82	82	81	80	80	79	79	81	82	82	80	79	81
August	79	79	79	79	79	79	78	79	79	80	79	80	80	80	81	81	82	84	84	83	83	83	82	82	83	84	82	83	82	79	74	81
September	78	72	72	73	72	72	75	77	77	77	77	76	75	76	76	76	77	76	74	72	74	75	82	82	80	75	73	73	74	73	--	75

MONONGAHELA RIVER BASIN

3-504. TYGART VALLEY RIVER AT ELKINS, W. VA.

LOCATION.--At city waterplant at Elkins, Randolph County, 2.5 miles upstream from gaging station.
DRAINAGE AREA.--268 square miles upstream from waterplant ; 272 square miles upstream from gaging station.
RECORDS AVAILABLE.--Water temperatures: January 1947 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum 78°F Sept. 18, 22; minimum, 33°F Jan. 31 to Feb. 4.
EXTREMES, 1947-65.--Water temperatures: Maximum, 92°F July 22, 1952; minimum, freezing point on many days during winter months most years.
REMARKS.--No appreciable inflow between waterplant and gaging station except during periods of heavy local rains. During flood periods part of the flow is diverted around the waterplant in a flood by-pass channel.

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	62	62	61	60	59	54	52	52	51	50	49	48	48	49	48	48	51	51	53	50	48	49	49	48	47	47	46	47	47	48	48	51
November	47	47	48	49	46	48	48	47	47	45	46	46	47	47	46	49	48	49	49	46	40	36	36	36	38	42	44	46	44	39	--	45
December	35	37	38	44	45	41	40	38	36	37	38	44	37	40	38	36	38	36	35	34	35	36	38	40	44	46	42	43	42	41	40	39
January	42	42	40	40	38	38	40	42	40	38	38	37	37	36	36	34	36	34	34	34	35	34	36	40	38	37	35	34	34	34	33	37
February	33	33	33	33	35	36	40	37	39	40	44	46	45	39	39	38	38	37	37	35	37	35	35	36	36	34	38	38	--	--	--	37
March	40	40	42	46	42	38	36	40	38	38	36	36	36	40	40	42	40	42	42	38	36	38	40	42	42	44	44	44	48	46	48	41
April	44	42	42	44	46	50	52	52	50	50	50	50	48	48	48	48	50	54	50	50	52	54	52	52	54	54	52	50	50	56	--	50
May	58	60	62	66	66	66	66	67	66	67	67	66	64	66	66	67	68	69	68	69	68	68	63	70	72	73	73	70	68	66	67	67
June	68	69	68	69	70	71	71	72	72	73	74	74	72	73	70	68	66	66	65	68	68	70	68	70	70	70	70	72	72	72	--	70
July	71	72	71	68	71	74	73	74	75	75	74	74	76	76	76	75	74	73	73	74	74	72	73	74	74	75	75	73	73	72	72	73
August	73	70	69	68	70	70	71	73	72	70	70	72	72	72	74	75	77	77	77	74	72	73	72	73	73	73	72	70	68	67	67	72
September	66	66	65	67	67	68	68	69	70	70	70	68	69	70	68	74	74	78	76	77	76	78	75	72	67	69	67	64	63	64	--	70

MONONGAHELA RIVER BASIN--Continued

3-508. ROARING CREEK AT NORTON, W. VA.

LOCATION.--At gaging station at bridge on State Route 21/1, 0.8 mile southwest of Harding, and 0.7 mile east of Norton, Randolph County.
DRAINAGE AREA.--29.2 square miles.
RECORDS AVAILABLE.--Water temperatures: February to September 1965.
Sediment records: February to September 1965.
EXTREMES, February to September 1965.--Water temperatures: Maximum, 79°F July 10, Aug. 18, Sept. 18; minimum, freezing point Mar. 22.
Sediment concentrations: Maximum daily, 166 ppm Apr. 26; minimum daily, 1 ppm on several days during June, July, and September.
Sediment loads: Maximum daily, 265 tons Apr. 26; minimum daily, less than 0.05 ton on many days during June to September.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen
May 20, 1965.	14		3.3	2.3	1.3						0		93	0.0			0.03		54	54	1.1	311	3.5	0	8.0
Sept. 27.....	A1.9		12	5.3	3.4						0		280	5.0		0.9	.22		160	160	2.1	770	3.5	2	9.1

A Daily mean discharge.

3-508. ROARING CREEK AT NORTON, W. VA.--Continued

Temperature (°F) of water, February to September 1965
(Once-daily measurement between 1230 and 1745)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
February.......	41	45	48	45	38	38	--	40	49	38	35	35	--	38	40	42	39	46	42	--	34	43	45	41	43	45	43	49	49	44	45	42
March.........	--	--	--	--	--	--	--	--	--	51	--	50	42	33	38	40	42	40	35	35	39	32	35	35	35	--	34	40	--	--	--	--
April..........	--	42	46	46	53	50	57	55	49	53	51	54	48	49	43	51	57	49	--	54	--	56	58	52	51	55	50	48	54	60	--	52
May...........	--	60	--	69	63	65	65	63	69	--	69	61	62	64	66	66	65	67	68	65	64	66	71	71	71	73	71	68	62	62	64	69
June	67	68	65	67	69	69	75	72	67	71	74	72	72	65	63	64	58	59	65	72	69	74	75	64	69	69	71	70	71	68	--	68
July...........	69	69	69	75	66	70	70	73	73	79	--	70	71	70	69	69	68	73	72	69	69	70	71	72	73	75	71	70	69	69	67	71
August........	70	68	67	67	70	71	71	--	70	66	69	70	67	72	76	70	77	79	71	72	67	72	68	70	72	75	67	69	63	--	66	70
September.....	65	66	67	--	66	67	70	69	72	73	66	72	62	68	65	70	71	79	71	71	70	71	70	65	60	55	60	62	61	63	--	67

MONONGAHELA RIVER BASIN--Continued

3-508. ROARING CREEK AT NORTON, W. VA.--Continued

Suspended sediment, February to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	JANUARY Mean discharge (cfs)	JANUARY Suspended sediment Mean concentration (ppm)	JANUARY Suspended sediment Tons per day	FEBRUARY Mean discharge (cfs)	FEBRUARY Suspended sediment Mean concentration (ppm)	FEBRUARY Suspended sediment Tons per day	MARCH Mean discharge (cfs)	MARCH Suspended sediment Mean concentration (ppm)	MARCH Suspended sediment Tons per day
1..				--	--	--	76	5	1.0
2..				--	--	--	69	5	.9
3..				--	--	--	74	7	1.4
4..				--	--	--	73	7	1.4
5..				--	--	--	79	12	2.6
6..				--	--	--	73	8	1.6
7..				--	--	--	62	9	1.5
8..				--	--	--	57	8	1.2
9..				--	--	--	60	8	1.3
10..				152	14	5.7	60	10	1.6
11..				112	15	4.5	52	8	1.1
12..				94	26	6.6	47	10	1.3
13..				74	20	4.0	44	10	1.2
14..				61	15	2.5	45	10	1.2
15..				52	15	2.1	49	8	1.0
16..				46	16	2.0	49	8	1.0
17..				42	8	.9	127	39	20
18..				39	8	.8	266	25	18
19..				36	11	1.1	178	16	7.7
20..				30	18	1.4	115	12	3.7
21..				32	14	1.2	81	13	2.8
22..				33	15	1.3	68	11	2.0
23..				31	18	1.5	81	17	4.4
24..				33	18	1.6	285	47	36
25..				52	17	2.4	463	119	149
26..				54	18	2.6	525	38	206
27..				57	24	3.7	306	34	28
28..				70	12	2.3	174	20	9.4
29..				--	--	--	207	48	25
30..				--	--	--	213	18	10
31..				--	--	--	146	15	5.9
Total				2212	--	48.2	4204	--	549.2

Day	APRIL Mean discharge (cfs)	APRIL Mean concentration (ppm)	APRIL Tons per day	MAY Mean discharge (cfs)	MAY Mean concentration (ppm)	MAY Tons per day	JUNE Mean discharge (cfs)	JUNE Mean concentration (ppm)	JUNE Tons per day
1..	106	14	4.0	65	13	2.3	4.8	6	0.1
2..	135	18	6.6	53	12	1.7	4.2	6	.1
3..	118	11	3.5	44	10	1.2	8.4	4	.1
4..	100	12	3.2	38	7	.7	8.1	5	.1
5..	80	12	2.6	34	7	.6	5.3	2	T
6..	101	28	7.6	31	8	.7	4.0	2	T
7..	123	9	3.0	29	8	.6	3.5	3	T
8..	102	10	2.8	28	9	.7	3.9	2	T
9..	216	60	35	33	8	.7	2.4	1	T
10..	184	11	5.5	28	7	.5	2.8	2	T
11..	229	62	S 47	25	6	.4	3.0	3	T
12..	260	20	14	23	6	.4	2.7	3	T
13..	170	10	4.6	21	5	.3	2.6	2	T
14..	117	7	2.2	18	4	.2	2.4	2	T
15..	116	20	B 6	16	5	.2	2.3	2	T
16..	354	70	A 65	14	6	.2	2.2	2	T
17..	210	10	5.7	36	9	.9	1.9	2	T
18..	132	17	6.0	32	8	.7	1.8	3	T
19..	188	10	5.1	25	7	.5	1.3	2	T
20..	170	8	3.7	21	7	.4	1.0	2	T
21..	121	9	2.9	19	7	.4	.9	1	T
22..	90	8	1.9	17	7	.3	.9	2	T
23..	84	13	2.9	14	9	.3	.9	3	T
24..	107	12	3.5	13	13	.4	5.3	3	T
25..	224	45	B 25	11	8	.2	6.2	5	.1
26..	591	166	265	10	5	.1	3.5	5	T
27..	310	29	24	8.4	5	.1	2.4	5	T
28..	172	19	8.8	7.6	5	.1	1.7	3	T
29..	113	15	4.6	7.4	8	.2	1.4	2	T
30..	82	12	2.6	6.6	8	.1	1.3	2	T
31..	--	--	--	5.7	6	.1	--	--	
Total	5105	--	574.3	733.7	--	16.2	93.1	--	0.9

S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

MONONGAHELA RIVER BASIN--Continued

3-508. ROARING CREEK AT NORTON, W. VA.--Continued

Suspended sediment, February to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	1.4	2	T	0.6	6	T	0.3	--	T
2..	1.0	2	T	.7	18	T	.5	--	T
3..	4.3	8	0.1	.6	17	T	.4	--	T
4..	14	4	.2	.4	16	T	.2	--	T
5..	9.3	22	S .7	.4	17	T	.1	--	T
6..	9.4	3	.1	.5	18	T	.1	--	T
7..	6.0	1	T	.7	19	T	.1	--	T
8..	3.9	1	T	.6	15	T	.1	--	T
9..	3.1	1	T	.5	13	T	.1	--	T
10..	4.7	2	T	.7	18	T	.1	--	T
11..	15	4	.2	.7	20	T	1.0	4	T
12..	11	1	T	.5	--	T	2.0	2	T
13..	5.8	7	.1	.3	--	T	1.9	2	T
14..	3.6	8	.1	.3	--	T	1.4	2	T
15..	3.0	7	.1	.3	--	T	1.6	1	T
16..	2.7	10	.1	.2	--	T	1.3	1	T
17..	2.5	8	.1	.2	--	T	1.0	2	T
18..	2.0	5	T	.2	--	T	.8	1	T
19..	1.7	7	T	.2	--	T	.7	1	T
20..	1.5	6	T	.6	--	T	.6	2	T
21..	1.4	3	T	.4	--	T	.8	2	T
22..	.9	3	T	.2	--	T	.6	2	T
23..	.7	6	T	.2	--	T	.4	4	T
24..	.7	3	T	.2	--	T	.9	2	T
25..	.7	3	T	.2	--	T	3.3	2	T
26..	.7	3	T	.3	--	T	2.9	1	T
27..	.6	5	T	.7	--	T	1.9	1	T
28..	.6	5	T	.9	--	T	1.3	2	T
29..	.5	4	T	.5	--	T	1.0	3	T
30..	.5	7	T	.3	--	T	.9	4	T
31..	.4	8	T	.2	--	T	--	--	
Total	113.6	--	2.1	13.3	--	0.4	28.3	--	0.1

Total discharge for period (cfs-days).. 11391.0
Total load for period (tons).. 1191.4

S Computed by subdividing day.
T Less than 0.05 ton.

MONONGAHELA RIVER BASIN--Continued

3-508. ROARING CREEK AT NORTON, W. VA.--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Mar. 26, 1965.......	0810			610	283		32	40	51	62	69	76	82	89	100			SBWC

3-509. GRASSY RUN AT NORTON, W. VA.

LOCATION.--At gaging station at wooden highway bridge on secondary State Route 5/5, 0.7 mile south of Harding, and at Norton, Randolph County.
DRAINAGE AREA.--2.86 square miles.
RECORDS AVAILABLE.--Water temperatures: February to September 1965.
Sediment records: February to September 1965.
EXTREMES, February to September 1965.--Water temperatures: Maximum, 79°F July 10.
Sediment concentrations: Maximum daily, 191 ppm Mar. 25; minimum daily, 5 ppm May 26, 28.
Sediment loads: Maximum daily, 25 tons Mar. 25, Apr. 26; minimum daily, less than 0.05 ton on many days during May, June, August, and September.

Temperature (°F) of water, February to September 1965
(Once-daily measurement between 1200 and 1845)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
February.......	--	--	--	--	--	--	--	--	--	55	56	51	45	44	50	55	54	50	40	49	49	42	45	50	40	--	50	50	--	--	--	--
March.........	60	43	55	52	43	47	46	48	43	40	44	45	50	50	50	55	44	44	50	--	46	53	55	45	48	48	51	60	56	48	56	49
April..........	--	--	58	61	64	57	65	63	59	60	57	58	51	57	50	49	49	55	--	60	59	65	63	55	56	59	52	54	51	67	--	58
May...........	--	65	--	72	64	70	65	69	69	--	71	62	65	71	72	67	68	--	73	68	64	70	72	75	72	75	70	64	60	65	70	58
June	74	70	64	72	71	70	74	73	64	63	73	72	68	68	--	63	58	62	66	65	--	73	76	64	71	67	69	74	74	--	--	69
July...........	71	68	73	75	65	72	73	75	71	79	68	72	74	72	66	69	69	72	72	70	70	72	70	75	72	75	70	70	68	65	67	71
August........	68	65	67	68	71	71	71	71	69	63	70	70	64	71	70	67	76	71	70	66	65	72	66	65	71	75	--	67	62	63	66	68
September.....	66	67	68	59	62	65	69	70	67	71	66	66	65	70	--	71	72	--	68	70	72	72	69	62	58	55	60	61	63	--	--	66

MONONGAHELA RIVER BASIN--Continued

3-509. GRASSY RUN AT NORTON, W. VA.--Continued

Suspended sediment, February to September 1965

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..				--	--	--	9.6	40	1.0
2..				--	--	--	8.9	30	.7
3..				--	--	--	9.4	28	.7
4..				--	--	--	9.2	43	1.1
5..				--	--	--	11	105	3.1
6..				--	--	--	10	19	.5
7..				--	--	--	9.7	13	.3
8..				--	--	--	9.4	29	.7
9..				--	--	--	10	45	1.2
10..				16	45	1.9	11	46	1.4
11..				14	66	2.5	9.5	40	1.0
12..				13	49	1.7	9.1	45	1.1
13..				11	28	.8	8.6	30	.7
14..				10	16	.4	8.5	16	.4
15..				9.7	52	1.4	8.5	38	.9
16..				9.6	51	1.3	8.5	42	1.0
17..				8.8	65	1.5	13	108	S 4.5
18..				7.9	46	1.0	19	74	3.8
19..				7.7	20	.4	14	48	1.8
20..				7.4	18	.4	12	16	.5
21..				7.6	19	.4	11	14	.4
22..				7.5	69	1.4	10	39	1.1
23..				7.4	84	1.7	12	90	A 3
24..				7.5	102	2.1	24	120	A 8
25..				8.3	56	1.2	48	191	25
26..				8.5	71	1.6	52	174	24
27..				8.7	108	2.5	34	52	4.8
28..				9.5	33	.8	27	42	3.1
29..				--	--	--	32	52	4.5
30..				--	--	--	27	42	3.1
31..				--	--	--	20	43	2.3
Total				287.6	--	25.0	505.9	--	105.7

Day	APRIL			MAY			JUNE		
1..	17	48	2.2	13	9	0.3	2.8	6	T
2..	19	60	3.1	12	8	.3	3.0	17	0.1
3..	17	22	1.0	10	22	.6	3.8	40	.4
4..	16	16	.7	9.3	9	.2	3.0	20	.2
5..	15	35	1.4	8.5	10	.2	2.8	17	.1
6..	16	55	2.4	8.0	13	.3	2.7	15	.1
7..	17	31	1.4	7.7	19	.4	2.7	18	.1
8..	16	35	1.5	7.2	42	.8	2.6	18	.1
9..	30	111	9.0	6.7	58	1.0	2.6	15	.1
10..	25	30	2.0	6.3	50	.8	2.7	13	.1
11..	33	65	S 6.3	5.7	26	.4	2.5	8	.1
12..	32	48	4.1	5.5	13	.2	2.5	8	.1
13..	24	32	2.1	5.1	14	.2	2.3	10	.1
14..	21	41	2.3	4.7	15	.2	2.3	18	.1
15..	23	99	6.1	4.3	12	.1	2.3	28	.2
16..	36	60	A 6	4.2	10	.1	2.3	19	.1
17..	26	7	.5	5.9	21	.3	2.3	15	.1
18..	22	17	1.0	4.6	8	.1	2.1	10	.1
19..	26	15	1.1	3.9	7	.1	2.1	14	.1
20..	24	26	1.7	4.1	10	.1	2.0	8	T
21..	20	30	1.6	3.9	11	.1	1.9	18	.1
22..	17	33	1.5	3.7	9	.1	2.1	17	.1
23..	17	40	1.8	3.6	7	.1	2.2	20	.1
24..	18	46	2.2	3.4	8	.1	2.7	41	.3
25..	32	70	A 6	3.3	6	.1	2.1	33	.2
26..	52	180	A 25	3.2	5	T	1.9	20	.1
27..	32	36	3.1	3.2	6	.1	1.8	13	.1
28..	24	34	2.2	3.1	5	T	1.8	12	.1
29..	19	22	1.1	3.0	7	.1	1.8	16	.1
30..	16	18	.8	2.9	6	T	1.9	27	.1
31..	--	--	--	2.9	6	T	--	--	
Total	702	--	101.2	172.9	--	7.6	71.6	--	3.7

S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.

MONONGAHELA RIVER BASIN--Continued

3-509. GRASSY RUN AT NORTON, W. VA.--Continued

Suspended sediment, February to September 1965--Continued

Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	1.7	18	0.1	1.4	22	0.1	1.1	20	0.1
2..	1.6	17	.1	1.4	23	.1	.9	20	T
3..	3.5	--	E .3	1.2	14	T	.9	16	T
4..	2.1	17	A .1	1.2	10	T	.8	18	T
5..	5.0	75	A 1	1.3	10	T	.9	18	T
6..	2.7	24	.2	1.4	10	T	.8	21	T
7..	2.1	18	.1	1.2	10	T	.8	22	T
8..	1.9	22	.1	1.3	10	T	.9	22	.1
9..	2.3	22	.1	1.2	11	T	.8	20	T
10..	2.3	20	.1	1.3	11	T	.7	15	T
11..	4.0	25	A .3	1.2	11	T	2.4	--	E .5
12..	2.6	11	.1	1.1	15	T	2.7	114	S 1.1
13..	2.1	11	.1	1.1	15	T	1.8	11	.1
14..	1.9	22	.1	1.1	15	T	1.6	8	T
15..	1.8	62	.3	1.0	18	T	1.3	6	T
16..	1.7	26	.1	1.0	23	.1	1.2	9	T
17..	1.6	15	.1	1.0	22	.1	1.1	8	T
18..	1.6	15	.1	1.0	18	T	1.0	6	T
19..	1.5	14	.1	1.2	18	.1	.9	9	T
20..	1.5	15	.1	1.1	19	.1	1.0	10	T
21..	1.5	14	.1	1.0	15	T	.9	11	T
22..	1.4	20	.1	.9	12	T	.9	13	T
23..	1.4	25	.1	1.0	12	T	.9	16	T
24..	1.4	15	.1	.9	14	T	1.4	34	.1
25..	1.5	60	.2	.9	18	T	1.3	24	.1
26..	1.4	66	.2	1.2	19	.1	1.0	17	T
27..	1.4	58	.2	1.6	16	.1	.9	16	T
28..	1.3	62	.2	1.0	22	.1	.9	18	T
29..	1.3	67	.2	.9	20	T	.9	42	.1
30..	1.3	50	.2	.9	15	T	.9	27	.1
31..	1.5	41	.2	.9	16	T	--	--	
Total	60.9	--	5.4	34.9	--	1.8	33.6	--	3.0

Total discharge for period (cfs-days)....1761.9
Total load for period (tons)....253.4

E Estimated.
S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.

MONONGAHELA RIVER BASIN--Continued

3-716. CHEAT RIVER AT LAKE LYNN, PA.

LOCATION.--At the Lake Lynn hydroelectric plant of the West Penn Power Company at Lake Lynn, Fayette County, 3 miles upstream from the mouth.
DRAINAGE AREA.--1,411 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1948 to September 1965.
EXTREMES, 1948-65.--Water temperatures: Maximum, 86°F July 28, 29, 1964; minimum, 33°F on several days during winter months most years.
REMARKS.--Records furnished by the West Penn Power Company.

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	69	68	--	--	66	65	65	64	64	--	--	62	62	62	61	61	--	--	60	59	58	58	58	--	--	60	60	60	59	59	--	--
November	--	58	58	57	56	53	--	--	56	56	--	57	56	--	--	56	54	54	54	53	--	--	50	50	50	50	--	--	--	45	--	--
December	45	44	45	47	--	--	42	42	42	42	43	--	--	41	43	42	42	41	--	--	41	38	37	38	--	--	--	42	45	47	46	--
January	--	--	--	42	42	40	40	--	--	--	39	40	40	40	39	--	--	36	34	34	34	35	--	--	35	35	36	36	38	--	--	--
February	35	35	34	33	33	--	--	36	35	34	36	37	--	--	39	42	42	44	45	--	--	--	44	42	42	42	--	--	--	--	--	--
March	40	40	39	39	39	--	--	41	42	40	40	40	--	--	40	40	40	39	39	--	--	40	41	42	42	42	--	--	43	43	43	--
April	43	44	--	--	48	46	48	49	50	--	--	52	52	50	52	--	--	--	53	52	53	53	52	--	--	53	53	52	53	--	--	--
May	--	--	61	62	62	69	69	--	--	72	71	71	69	69	--	--	70	72	74	72	70	--	--	73	74	76	75	75	--	--	--	--
June	73	74	72	72	--	--	76	77	78	76	77	--	--	75	73	72	70	70	--	--	74	74	73	74	75	--	--	76	76	76	--	--
July	76	76	--	--	--	76	77	77	78	--	--	78	78	80	80	80	--	78	77	78	77	77	--	--	77	78	78	77	77	--	--	--
August	--	75	76	75	77	77	--	--	78	76	77	77	78	--	--	80	81	80	78	77	--	77	77	77	76	76	76	--	--	75	75	--
September	76	76	76	--	--	78	77	77	77	--	--	--	74	76	76	77	77	--	--	77	78	76	76	75	--	--	72	72	71	71	--	--

MONONGAHELA RIVER BASIN--Continued

3-750. MONONGAHELA RIVER AT CHARLEROI, PA.

LOCATION.--On left bank at intake to Ohio River Valley Water Sanitation Commission (ORSANCO) monitor at Charleroi filtration plant, Washington County, 1 mile downstream from bridge on Interstate Highway 70-S, and 0.8 mile upstream from gaging station.
DRAINAGE AREA.--5,213 square miles (at gaging station).
RECORDS AVAILABLE.--Chemical analyses: July 1963 to September 1965.
Water temperatures: July 1963 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 1,320 micromhos Sept. 16; minimum daily, 162 micromhos Jan. 8.
Water temperatures: Maximum, 79°F July 9-11, 13-21, Aug. 8, 18-20; minimum, 37°F Jan. 21, 22, Feb. 3-5.
EXTREMES, 1963-65.--Specific conductance: Maximum daily, 1,320 micromhos Sept. 16, 1965; minimum daily, 123 micromhos Mar. 7, 1964.
Water temperatures: Maximum, 82°F July 26, 28, 29, 1964; minimum, 34°F Dec. 20, 21, 23, 24, 1963.
REMARKS.--Values reported for acidity are potential free except as footnoted. All acidity values are determined to pH 7.0. Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) minimum daily pH for each month, and (4) maximum daily specific conductance for each 10-day period.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Oct. 3, 1964.	6410			0.62	1.8	58	18				0	0	345	8.0	0.4	0.4	--	494	219	219	1.9	876	3.3		--
Oct. 13......	1640			--	--	--	--				--	--	188	--	--	--	0.11	--	--	--	--	535	3.6		0.0
Oct. 18......	1460			--	--	30	9.2				0	0	166	10	.2	2.1	--	262	113	113	.5	452	3.9		--
Oct. 31......	1580			--	--	--	--				--	--	322	--	--	--	.07	--	--	--	--	811	3.6		.0
Nov. 6.......	1200			.33	2.4	79	23				0	0	428	14	.4	4.4	--	648	292	292	1.2	1000	3.6		--
Nov. 15......	910			--	--	--	--				--	--	327	--	--	--	.34	--	--	--	--	764	4.1		.0
Nov. 21......	8980			--	--	--	--				--	--	260	--	--	--	.44	--	--	--	--	653	4.0		.0
Nov. 30......	4130			--	--	25	6.8				0	0	115	8.0	.2	2.1	--	186	90	90	.4	325	4.2		--
Dec. 2.......	5510			--	--	36	11				0	0	173	8.0	.2	2.2	--	278	135	135	.4	435	4.4		--
Dec. 15......	14300			--	--	19	4.6				2	0	70	4.0	.1	2.1	--	120	66	65	.1	193	5.3		--
Dec. 18......	10600			--	--	--	--				--	--	96	--	--	--	.76	--	--	--	--	264	4.5		.0
Dec. 24......	9940			2.3	.49	--	--				--	--	93	--	--	--	.04	--	--	--	.4	268	4.1		.0
Jan. 1, 1965.	11400			--	--	--	--				--	--	95	--	--	--	.15	--	--	--	--	251	4.8		.0
Jan. 8.......	14700			--	--	14	4.7				2	0	60	4.0	.1	2.2	--	104	54	53	--	162	5.2		--
Jan. 13......	16200			--	--	--	--				--	--	130	--	--	--	.11	--	--	--	--	341	4.3		.0
Jan. 23......	9060			3.3	70	29	9.2				0	0	143	8.0	.2	1.6	--	240	111	111	.4	379	4.2		--
Feb. 1.......	9600			--	--	16	5.4				2	0	70	6.0	.0	1.6	--	112	62	60	--	193	5.4		--
Feb. 9.......	30800			2.8	39	--	--				--	--	100	--	--	--	--	--	--	--	.4	278	4.4		--
Feb. 10......	22200			--	--	--	--				--	--	119	--	--	--	.18	--	--	--	--	316	4.5		.0
Feb. 17......	9240			--	--	--	--				--	--	98	--	--	--	.18	--	--	--	--	262	4.8		.0
Feb. 26......	11200			--	--	29	8.3				2	0	139	10	.1	1.5	--	212	107	105	--	352	4.6		--

Mar. 3, 1965.	11300			.52	.44	35	11				0	0	167	6.0	.3	2.1	--	259	133	133	.3	434	4.3		--
Mar. 17......	8440			--	--	--	--				--	--	117	--	--	--	.17	--	--	--	--	308	5.7		.0
Mar. 24......	18000			--	--	--	--				--	--	110	--	--	--	.08	--	--	--	--	291	5.5		.0
Mar. 31......	30500			--	--	16	4.0				2	0	58	14	.1	1.5	--	98	56	55	--	167	5.5		--
Apr. 1.......	26100			--	--	17	5.6				4	0	67	6.0	.1	2.1	--	116	66	62	--	190	6.0		--
Apr. 8.......	11800			2.0	.11	--	--				--	--	--	--	--	--	--	--	--	--	A.1	255	4.5		--
Apr. 10......	23400			--	--	--	--				--	--	98	--	--	--	.22	--	--	--	--	262	4.7		.0
Apr. 12......	25700			--	--	27	8.3				10	0	114	6.0	.1	1.6	--	176	102	94	--	291	4.7		--
Apr. 28......	27500			--	--	--	--				--	--	107	--	--	--	.11	--	--	--	--	274	5.0		.0
May 1........	13400			--	--	15	5.6				5	0	67	2.0	.1	.8	--	127	60	56	--	188	6.5		--
May 9........	3890			--	--	--	--				--	--	141	--	--	--	.06	--	--	--	--	347	5.2		.0
May 20.......	2420			--	--	--	--				--	--	209	--	--	--	.09	--	--	--	--	493	5.4		.0
May 31.......	1180			.32	1.2	55	24				0	0	312	10	.2	2.2	--	497	236	236	A.2	704	5.1		--
June 1.......	1180			.26	.79	--	--				--	--	--	--	--	--	--	--	--	--	.4	651	3.9		--
June 2.......	1340			--	--	52	17				0	0	260	13	.2	2.1	--	432	200	200	--	625	3.9		--
June 10......	1250			--	--	--	--				--	--	403	--	--	--	.05	--	--	--	--	888	4.4		.0
June 18......	830			--	--	--	--				--	--	392	--	--	--	.06	--	--	--	--	893	4.4		.0
June 26......	770			--	--	83	28				0	0	465	18	.4	2.6	--	710	322	322	--	1040	4.4		--
July 5.......	630			--	--	80	24				0	0	428	26	.3	2.7	--	664	298	298	--	947	4.1		--
July 10......	810			--	--	--	--				--	--	456	--	--	--	.05	--	--	--	--	982	4.1		.0
July 20......	930			--	--	--	--				--	--	508	--	--	--	.08	--	--	--	--	1120	3.8		.0
July 30......	860			--	--	96	29				0	0	578	19	.5	.5	--	884	359	359	--	1270	3.5		--
July 31......	850			1.8	2.0	--	--				--	--	--	--	--	--	--	--	--	--	A1.7	1270	3.4		--
Aug. 1.......	830			--	--	98	26				0	0	580	18	.3	1.5	--	808	360	360	--	1260	3.5		--
Aug. 5.......	700			1.4	2.3	--	--				--	--	--	--	--	--	--	--	--	--	A1.7	1240	3.4		--
Aug. 11......	940			--	--	--	--				--	--	560	--	--	--	.05	--	--	--	--	1230	3.5		.0
Aug. 20......	700			--	--	72	22				0	0	426	20	.2	2.7	--	640	270	270	--	958	4.0		--
Aug. 31......	1040			--	--	--	--				--	--	512	--	--	--	.06	--	--	--	--	1130	3.8		.0
Sept. 1......	970			--	--	--	--				--	--	520	--	--	--	.05	--	--	--	--	1150	3.8		.0
Sept. 4......	750			--	--	84	27				0	0	514	25	.2	4.3	--	794	321	321	--	1140	3.9		--
Sept. 16.....	1060			.67	2.4	99	54				0	0	586	25	.4	5.5	--	924	469	469	A1.3	1320	3.6		--
Sept. 28.....	1340			--	--	--	--				--	--	540	--	--	--	.20	--	--	--	--	1210	3.8		.1

A Total acidity.

MONONGAHELA RIVER BASIN--Continued

3-750. MONONGAHELA RIVER AT CHARLEROI, PA.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement, between 0800 and 0900)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	848	741	403	251	193	--	190	188	651	966	1260	1150
2.....	854	745	435	246	219	--	197	197	625	954	1250	1140
3.....	876	802	430	249	237	434	195	194	671	952	1220	1120
4.....	794	889	368	200	264	356	213	203	715	949	1220	1140
5.....	658	961	331	216	264	308	234	226	765	947	1240	1150
6.....	512	1000	284	218	264	270	232	260	796	949	1240	1140
7.....	510	948	215	180	274	264	260	300	783	954	1230	1130
8.....	584	918	262	162	282	258	255	336	802	954	1210	1100
9.....	608	874	284	174	278	250	255	347	845	966	1220	1130
10.....	562	788	232	191	316	270	262	326	888	982	1240	1140
11.....	488	747	220	201	250	284	270	332	862	995	1230	1150
12.....	491	726	207	230	223	294	291	323	848	1020	1220	1180
13.....	535	725	197	341	213	282	262	350	816	1120	1180	1210
14.....	498	762	199	317	213	250	237	377	833	1120	1140	1280
15.....	466	764	193	302	211	280	225	364	862	982	1130	1300
16.....	469	744	248	263	197	264	231	392	876	1000	1130	1320
17.....	486	710	253	277	262	308	213	414	886	1040	1110	1310
18.....	452	722	264	270	253	303	196	450	893	1090	1070	1260
19.....	458	743	255	304	230	215	234	463	882	1110	1010	1240
20.....	491	668	241	304	250	248	289	493	862	1120	958	1240
21.....	562	653	220	341	252	276	229	461	866	1140	981	1250
22.....	646	558	225	377	264	276	224	430	895	1160	997	1270
23.....	724	478	237	378	278	278	235	455	942	1170	997	1300
24.....	690	398	268	350	259	291	246	492	979	1180	997	1310
25.....	666	--	245	281	276	248	258	480	1020	1180	989	1280
26.....	655	426	238	279	352	210	232	535	1040	1200	981	1210
27.....	652	591	253	227	285	229	251	584	1040	1240	971	1200
28.....	691	428	235	222	316	189	274	605	1040	1270	971	1210
29.....	739	356	234	201	--	191	222	615	1030	1270	1010	1220
30.....	795	325	257	204	--	211	194	681	1020	1270	1050	1250
31.....	811	--	250	222	--	167	--	704	--	1270	1130	--
Average	621	696	263	257	256	265	236	405	867	1100	1100	1200

MONONGAHELA RIVER BASIN--Continued

3-750. MONONGAHELA RIVER AT CHARLEROI, PA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement, between 0800 and 0900)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	66	65	64	65	64	63	62	61	61	60	59	58	57	57	57	57	57	57	57	56	56	56	56	55	55	55	55	55	56	56	55	58
November	55	55	55	55	56	55	55	55	54	53	53	53	54	53	54	54	54	53	53	53	52	49	48	47	--	46	46	47	50	49	--	52
December	47	46	45	45	45	47	45	44	45	44	44	44	46	45	44	43	44	43	42	42	42	42	42	42	42	42	43	43	43	44	44	44
January	44	43	45	44	43	43	43	43	43	45	43	43	43	42	42	42	39	39	38	38	37	37	38	40	40	41	41	42	40	39	39	41
February	38	38	37	37	37	38	39	39	40	41	41	42	42	44	42	42	42	43	42	41	43	42	41	41	41	40	40	42	--	--	--	41
March	--	--	43	44	44	44	43	43	43	43	44	44	43	44	44	43	43	43	43	43	43	42	43	43	44	45	45	46	46	46	46	44
April	46	46	45	46	46	48	49	48	49	49	51	52	53	52	54	54	52	53	53	53	54	55	55	56	56	56	56	55	56	56	--	52
May	57	58	58	59	61	63	64	65	67	67	68	68	68	68	68	70	69	69	69	70	70	70	72	73	74	73	74	73	73	71	72	68
June	72	72	73	72	72	73	73	73	74	75	76	76	77	76	76	75	74	74	73	73	73	74	75	75	75	75	75	75	75	76	--	74
July	76	77	77	78	78	78	78	78	79	79	79	78	79	79	79	79	79	79	79	79	79	78	78	78	78	78	78	78	78	77	77	78
August	77	77	76	76	76	75	76	79	78	78	77	77	77	77	78	78	78	79	79	79	78	78	78	78	78	78	78	78	75	75	74	77
September	74	73	72	72	74	73	73	74	75	75	75	76	76	75	75	74	74	74	77	75	76	76	76	77	76	72	73	72	71	70	--	74

MONONGAHELA RIVER BASIN--Continued

3-765. YOUGHIOGHENY RIVER AT FRIENDSVILLE, MD.

LOCATION.--Temperature recorder at gaging station on left bank, 0.7 mile upstream from bridge on State Highway 42 at Friendsville, Garrett County, and 1.5 miles upstream from Bear Creek.
DRAINAGE AREA.--295 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 81°F July 14 and Aug. 16; minimum, freezing point on many days in January and February.
EXTREMES, 1962-65.--Water temperatures: Maximum observed, 83°F July 22, 27, 28, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Records fair, probably because of friction in recorder.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	59	64	64	60	59	54	53	55	52	51	51	51	55	56	56	57	57	58	56	51	50	51	50	49	49	51	52	54	53	54	51	54
Minimum	57	59	59	57	53	50	48	49	51	48	46	44	49	51	52	53	56	53	51	48	47	49	48	46	44	44	49	50	52	51	48	50
November																																
Maximum	50	50	51	51	51	50	48	47	48	49	51	51	54	51	48	52	52	50	49	49	45	38	39	40	43	44	45	45	45	42	--	48
Minimum	46	46	49	48	49	47	45	44	45	46	48	48	51	48	45	48	50	48	48	45	38	35	35	37	40	42	43	44	42	38	--	45
December																																
Maximum	38	38	39	43	44	44	39	38	38	37	39	41	42	41	39	36	38	38	33	34	35	36	37	40	42	43	42	42	40	42	42	39
Minimum	35	35	37	39	43	39	37	36	37	34	36	39	41	39	34	33	36	33	33	33	34	35	36	37	40	42	42	40	39	40	40	37
January																																
Maximum	40	40	40	38	38	39	39	42	43	42	37	35	35	33	32	32	32	32	32	32	32	33	35	36	36	38	37	34	32	32	32	36
Minimum	36	36	38	36	36	38	36	39	42	37	35	34	33	32	32	32	32	32	32	32	32	32	33	32	36	36	34	32	32	32	32	34
February																																
Maximum	32	32	32	32	32	33	33	37	39	40	43	44	43	39	37	38	39	39	38	34	37	37	35	36	36	34	34	39	--	--	--	37
Minimum	32	32	32	32	32	32	32	32	37	39	40	42	39	36	35	35	36	37	34	34	34	34	34	34	34	34	33	33	--	--	--	35
March																																
Maximum	39	39	40	42	40	37	37	39	39	38	36	36	38	38	38	39	38	41	40	39	36	39	41	40	40	41	41	44	46	44	42	40
Minimum	34	36	39	40	37	36	36	37	38	36	35	34	34	36	36	36	34	34	38	36	34	34	38	40	39	39	40	40	44	42	40	37
April																																
Maximum	43	43	42	44	47	47	50	52	50	49	50	51	50	48	48	48	50	52	51	51	51	57	54	51	50	52	52	50	52	55	--	50
Minimum	40	40	39	39	42	45	45	46	48	45	47	48	46	44	46	46	44	48	50	48	47	50	51	50	48	48	50	50	48	49	--	46
May																																
Maximum	58	63	65	65	62	65	65	66	69	69	69	62	63	64	65	68	68	68	69	69	65	68	71	71	66	70	69	68	64	61	65	66
Minimum	52	54	59	56	57	58	60	60	62	63	61	58	56	55	56	65	63	60	60	63	62	60	66	65	63	62	64	63	60	56	55	60
June																																
Maximum	70	68	67	65	68	74	76	72	72	71	71	73	72	71	68	62	58	60	65	70	71	73	74	69	71	72	73	76	77	74	--	70
Minimum	58	64	61	58	60	64	68	65	65	65	63	65	63	62	61	58	58	57	57	58	63	64	66	62	59	61	63	66	70	67	--	62
July																																
Maximum	74	74	74	78	74	77	75	77	79	76	75	76	79	81	79	77	76	76	77	77	76	73	73	79	78	80	74	75	73	72	69	76
Minimum	63	65	68	68	71	69	70	70	70	72	70	69	70	71	73	69	69	70	71	68	66	66	69	70	74	70	70	67	65	64	64	69
August																																
Maximum	71	69	70	70	74	74	76	76	73	71	71	74	74	76	80	81	80	77	72	74	70	75	74	73	74	76	74	71	68	68	70	73
Minimum	65	65	62	62	63	68	68	71	70	66	64	64	65	68	70	72	72	70	68	65	66	68	70	67	67	69	69	65	61	60	63	67
September																																
Maximum	69	71	72	72	72	73	73	72	75	77	74	72	67	72	72	74	75	76	77	78	77	76	74	71	63	62	63	63	64	66	--	71
Minimum	65	63	64	64	64	67	66	66	68	69	71	67	66	66	68	68	69	70	70	70	71	70	70	63	59	56	56	56	59	60	--	65

OHIO RIVER MAIN STEM

3-860.6. OHIO RIVER AT SOUTH HEIGHTS, PA.

LOCATION.--On left bank at intake line to Ohio River Valley Water Sanitation Commission (ORSANCO) monitor at Duquesne Powerplant at South Heights, Beaver County, 1.6 miles upstream from Ambridge-Woodlawn Bridge.
DRAINAGE AREA.--19,520 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1963 to September 1965.
Water temperatures: July 1963 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 790 micromhos Sept. 1, 2; minimum daily, 206 micromhos Feb. 14.
Water temperatures: Maximum, 83°F July 28; minimum, freezing point Jan. 31 to Feb. 2, Feb. 4.
EXTREMES, 1963-65.--Specific conductance: Maximum daily, 828 micromhos Oct. 12, 1963; minimum daily, 142 micromhos Mar. 8, 1964.
Water temperatures: Maximum, 85°F July 25, 26, 1964; minimum, freezing point Jan. 31 to Feb. 2, Feb. 4, 1965.
REMARKS.--Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) maximum daily specific conductance for each 10-day period and (4) minimum daily pH for each month. Records of pH of daily samples available in district office at Columbus, Ohio.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Oct. 8, 1964..				--	--	64	20				0	0	313	28	0.4	8.3	--	508	242	242	A.2	775	4.1		--
Oct. 18.......				0.66	3.4	--	--				--	--	279	--	--	--	0.68	--	--	--	A.3	756	4.0		0.2
Oct. 21.......				--	--	--	--				--	--	275	--	--	--	.44	--	--	--	--	744	4.0		.2
Oct. 29.......				--	--	52	15				4	0	221	34	.5	10	--	397	191	188	--	611	5.2		--
Nov. 7........				--	--	--	--				--	--	218	--	--	--	.70	--	--	--	--	634	5.9		.1
Nov. 17.......				--	--	--	--				--	--	234	--	--	--	1.6	--	--	--	--	676	5.8		.2
Nov. 23.......				--	--	71	16				0	0	311	26	.6	10	--	521	243	243	--	771	4.4		--
Nov. 25.......				.98	2.3	--	--				--	--	--	--	--	--	--	--	--	--	A.1	714	4.3		--
Nov. 29.......				--	--	42	11				8	0	154	30	.3	4.9	--	292	150	144	--	457	5.7		--
Dec. 1........				--	--	43	13				18	0	156	36	.3	3.6	--	309	161	146	--	499	6.7		--
Dec. 12.......				1.8	1.3	--	--				--	--	110	--	--	--	.36	--	--	--	A.0	328	5.3		.1
Dec. 17.......				--	--	21	5.2				10	0	68	10	.2	3.9	--	137	74	66	--	219	6.0		--
Dec. 27.......				--	--	--	--				--	--	90	--	--	--	.06	--	--	--	--	291	6.1		.1
Jan. 3, 1965..				--	--	--	--				--	--	101	--	--	--	.03	--	--	--	--	290	6.3		.0
Jan. 13.......				--	--	18	6.4				7	0	74	11	.1	2.9	--	138	72	66	--	214	6.6		--
Jan. 16.......				--	--	--	--				--	--	100	--	--	--	.02	--	--	--	--	282	6.2		.0
Jan. 24.......				--	--	27	11				10	0	115	16	.3	4.4	--	217	113	105	--	336	6.3		--
Jan. 27.......				1.8	.46	--	--				--	--	--	--	--	--	--	--	--	--	A.1	282	5.6		--
Feb. 8........				--	--	28	12				4	0	120	18	.2	4.7	--	220	120	117	--	355	6.5		--
Feb. 10.......				1.4	.38	--	--				--	--	--	--	--	--	--	--	--	--	A.1	254	5.8		--
Feb. 12.......				--	--	--	--				--	--	95	--	--	--	.14	--	--	--	--	262	6.3		.0
Feb. 14.......				--	--	17	6.6				6	0	69	8.0	.1	2.7	--	119	70	64	--	206	6.2		--
Feb. 27.......				--	--	--	--				--	--	110	--	--	--	.08	--	--	--	--	345	6.5		.4

A Potential free acidity.

OHIO RIVER MAIN STEM--Continued

3-860.6. OHIO RIVER AT SOUTH HEIGHTS, PA.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Mar. 2, 1965..				1.9	0.86	32	9.4				6	0	118	24	0.1	3.9	--	230	119	114	0.0	350	5.8		--
Mar. 19.......				--	--	--	--				--	--	117	--	--	--	0.16	--	--	--	--	337	6.3		0.0
Mar. 24.......				--	--	--	--				--	--	116	--	--	--	.07	--	--	--	--	347	6.9		.0
Mar. 31.......				--	--	21	6.0				5	0	75	12	.0	2.7	--	148	77	73	--	219	6.0		--
Apr. 1........				--	--	21	5.6				5	0	74	10	.1	2.8	--	132	76	72	--	214	7.1		--
Apr. 10.......				--	--	--	--				--	--	92	--	--	--	.12	--	--	--	--	271	6.6		.0
Apr. 14.......				--	--	--	--				--	--	106	--	--	--	.14	--	--	--	--	277	6.1		.0
Apr. 27.......				--	--	27	7.6				8	0	105	10	.1	2.7	--	174	98	92	--	284	6.2		--
Apr. 29.......				.13	.31	--	--				--	--	--	--	--	--	--	--	--	--	.1	279	5.5		--
May 2.........				--	--	--	--				--	--	101	--	--	--	.08	--	--	--	--	274	6.6		.0
May 13........				--	--	20	6.8				14	0	72	11	.3	2.2	--	151	78	66	--	233	7.0		--
May 20........				--	--	--	--				--	--	88	--	--	--	.14	--	--	--	--	268	6.3		.0
May 27........				.13	.98	--	--				--	--	--	--	--	--	--	--	--	--	A.0	352	6.3		--
May 31........				--	--	33	12				26	0	133	16	.4	4.5	--	264	132	111	--	401	6.7		--
June 3........				--	--	32	10				14	0	116	30	.2	4.0	--	240	121	110	--	366	6.4		--
June 6........				--	--	--	--				--	--	137	--	--	--	.36	--	--	--	--	408	6.8		.1
June 20.......				--	--	--	--				--	--	131	--	--	--	.41	--	--	--	--	433	6.7		.1
June 29.......				--	--	49	13				10	0	192	22	.4	8.0	--	360	176	168	--	543	7.1		--
June 30.......				.22	1.2	--	--				--	--	--	--	--	--	--	--	--	--	.2	541	6.0		--
July 3........				--	--	47	13				8	0	181	26	.4	8.3	--	356	171	164	--	528	5.9		--
July 6........				1.4	1.1	--	--				--	--	--	--	--	--	--	--	--	--	.2	544	5.8		--
July 10.......				--	--	--	--				--	--	188	--	--	--	.14	--	--	--	--	548	6.2		.1
July 18.......				--	--	--	--				--	--	226	--	--	--	.18	--	--	--	--	632	6.2		.1
July 28.......				--	--	60	18				10	0	256	38	.5	9.3	--	476	224	216	--	696	6.6		--
Aug. 2........				--	--	59	18				8	0	251	36	.5	12	--	473	213	207	--	699	6.0		--
Aug. 7........				--	--	--	--				--	--	275	--	--	--	.15	--	--	--	--	748	6.1		.1
Aug. 11.......				.07	2.2	--	--				--	--	--	--	--	--	--	--	--	--	.0	733	5.5		--
Aug. 16.......				--	--	--	--				--	--	275	--	--	--	.55	--	--	--	--	748	5.7		.1
Aug. 31.......				--	--	65	19				4	0	293	42	.5	14	--	524	240	237	--	785	5.8		--
Sept. 1.......				--	--	60	21				5	0	294	40	.5	13	--	531	236	232	--	790	6.5		--
Sept. 9.......				--	--	44	14				21	0	164	42	.3	6.6	--	353	168	151	--	550	6.5		--
Sept. 18......				--	--	--	--				--	--	267	--	--	--	.51	--	--	--	--	724	3.1		.1
Sept. 30......				.48	2.9	--	--				--	--	293	36	--	--	.40	--	--	--	.2	776	4.5		.1

A Potential free acidity.

OHIO RIVER MAIN STEM--Continued

3-860.6. OHIO RIVER AT SOUTH HEIGHTS, PA.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement at 0800)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	611	618	499	267	240	347	214	272	392	530	705	790
2.....	641	615	465	261	253	350	233	274	380	530	699	790
3.....	656	620	457	290	269	319	236	239	366	528	703	666
4.....	735	613	435	251	273	325	240	238	398	535	726	709
5.....	735	611	411	216	275	350	231	248	405	544	728	712
6.....	750	623	411	239	305	350	242	258	408	544	743	668
7.....	769	634	350	236	318	284	249	264	374	532	748	613
8.....	775	622	334	246	355	256	254	264	366	534	746	562
9.....	750	632	294	254	300	244	265	272	376	542	723	550
10.....	745	632	287	256	254	253	271	260	402	548	721	565
11.....	726	630	301	222	262	266	254	256	414	586	733	578
12.....	704	637	328	220	262	272	233	246	403	592	717	592
13.....	709	644	325	214	226	282	273	233	397	602	718	639
14.....	693	651	258	239	206	289	277	243	374	596	728	655
15.....	709	657	236	282	214	301	254	249	367	601	726	666
16.....	716	667	225	275	208	308	261	254	386	624	748	672
17.....	732	676	219	265	207	314	271	248	412	628	748	692
18.....	756	664	232	277	217	328	263	244	422	632	740	724
19.....	736	674	258	275	228	337	236	254	432	626	730	712
20.....	744	673	248	298	240	311	215	268	433	623	733	673
21.....	744	669	274	310	241	322	225	275	434	635	739	681
22.....	709	656	260	321	254	294	269	282	428	665	743	691
23.....	697	771	282	336	267	311	234	284	452	681	737	685
24.....	692	697	274	313	275	347	225	327	475	684	731	681
25.....	680	714	264	263	295	337	234	333	506	691	734	687
26.....	663	658	270	282	342	306	254	342	511	691	737	692
27.....	641	620	291	232	345	249	284	352	510	695	748	700
28.....	620	546	284	233	342	254	249	371	525	696	754	706
29.....	611	457	260	239	--	238	279	373	543	686	764	726
30.....	617	466	248	229	--	229	263	381	541	685	773	776
31.....	612	--	251	--	--	219	--	401	--	692	785	--
Average	699	634	307	261	266	296	249	284	427	612	735	675

OHIO RIVER MAIN STEM--Continued

3-860.6. OHIO RIVER AT SOUTH HEIGHTS, PA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at 0800)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	71	72	71	72	72	69	67	67	68	62	62	67	64	65	65	67	63	62	63	69	65	66	65	60	59	62	64	65	65	64	61	64
November	64	64	60	62	64	63	59	59	61	61	59	62	59	60	59	60	62	60	62	59	58	58	57	54	58	50	52	52	51	52	--	57
December	51	48	50	51	45	47	46	51	49	48	48	40	39	46	47	46	46	46	40	39	40	37	41	41	45	46	44	44	43	43	45	46
January	43	43	42	43	42	42	43	42	42	42	42	41	42	39	38	35	35	34	33	34	35	36	37	38	37	37	37	36	35	34	32	39
February	32	32	--	32	34	34	35	36	37	37	39	41	42	41	42	41	46	49	47	39	39	37	37	37	38	38	38	39	--	--	--	38
March	38	--	43	44	44	42	42	42	43	43	43	43	43	43	44	45	45	--	47	44	43	42	41	45	46	--	45	45	48	--	48	44
April	48	48	48	48	49	--	51	53	51	55	55	56	56	55	56	56	55	55	54	55	52	59	59	53	55	58	59	61	60	62	--	54
May	62	62	62	64	65	66	67	66	68	71	71	69	70	69	68	66	70	69	71	72	71	70	70	71	72	--	75	75	72	74	72	72
June	74	73	72	73	72	72	76	76	75	76	76	76	76	75	75	73	74	74	72	72	76	77	78	76	75	77	76	79	79	78	--	75
July	76	77	79	77	79	78	79	79	79	78	79	79	80	80	82	82	81	81	81	81	80	80	80	80	80	80	81	83	79	78	79	79
August	80	79	78	77	78	79	80	78	78	--	77	76	77	78	79	79	79	80	80	79	78	79	79	78	78	78	--	78	77	76	76	78
September	76	75	75	74	74	74	74	75	75	76	76	78	78	78	78	77	79	80	81	80	81	81	--	80	78	78	77	77	76	75	--	77

BEAVER RIVER BASIN

3-940. MAHONING RIVER AT LEAVITTSBURG, OHIO

LOCATION.--Temperature recorder at gaging station on right bank at highway bridge at Leavittsburg, Trumbull County, 300 feet downstream from Duck Creek, and 1.2 miles downstream from Eagle Creek.
DRAINAGE AREA.--580 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1953.
Water temperatures: April 1943 to December 1945, October 1946 to September 1948, unpublished, October 1948 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 78°F Aug. 16; minimum, freezing point on several days in February.
EXTREMES, 1948-65.--Water temperatures: Maximum, 86°F July 2, 1949; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	60	60	60	60	60	59	57	56	55	54	54	54	52	53	54	54	56	55	55	54	53	52	52	51	50	50	50	52	52	52	52	54
Minimum	59	60	60	60	59	57	56	55	54	54	53	52	52	52	53	53	54	54	54	53	52	52	51	50	50	50	50	50	52	52	52	54
November																																
Maximum	52	51	51	51	51	51	51	51	51	51	51	52	51	51	51	51	51	50	48	47	46	42	40	38	38	38	40	41	41	41	—	47
Minimum	51	51	50	50	50	51	51	51	50	50	50	51	51	51	50	50	50	48	47	46	42	40	38	38	37	37	38	40	41	40	—	46
December																																
Maximum	40	38	37	36	36	36	36	36	35	35	35	36	36	36	36	35	34	34	34	34	34	34	34	34	41	40	40	39	37	38	39	36
Minimum	38	37	36	36	36	36	36	35	35	35	35	35	36	36	35	34	34	34	34	34	34	34	33	33	34	40	38	37	36	36	38	35
January																																
Maximum	38	37	37	35	34	34	34	42	43	41	37	35	35	35	34	34	34	34	34	33	33	33	33	—	—	—	—	34	34	34	34	35
Minimum	37	36	35	34	33	34	33	34	41	37	35	34	35	34	34	34	34	34	33	33	33	33	33	—	—	—	—	33	33	34	34	34
February																																
Maximum	33	33	33	33	33	32	32	32	32	36	36	40	40	36	34	34	35	35	35	34	33	33	33	33	33	33	33	33	—	—	—	34
Minimum	32	32	33	33	32	32	32	32	32	32	36	36	36	34	34	34	34	35	34	33	33	33	33	32	33	33	33	33	—	—	—	33
March																																
Maximum	34	35	35	36	36	35	36	36	37	37	36	36	36	36	36	38	38	39	39	37	36	34	34	34	34	35	37	39	42	40	40	37
Minimum	33	34	35	35	35	34	34	36	36	36	36	36	36	36	36	36	36	36	37	36	34	34	34	33	34	34	34	36	39	39	38	35
April																																
Maximum	40	40	41	42	44	46	51	51	50	50	51	52	51	49	49	48	45	45	46	48	49	53	52	51	51	51	51	49	53	55	—	48
Minimum	38	38	38	39	40	44	45	49	49	47	49	51	47	45	48	45	44	42	41	45	47	48	51	50	50	50	48	48	49	52	—	46
May																																
Maximum	56	61	62	63	62	63	66	67	69	68	67	65	65	64	64	64	64	63	64	64	64	67	64	65	65	66	68	68	66	64	64	65
Minimum	54	55	59	60	61	61	62	64	66	67	65	62	62	61	62	63	61	60	62	62	62	63	63	63	64	64	66	66	63	63	62	62
June																																
Maximum	65	65	63	63	65	67	69	68	71	72	72	73	71	69	68	67	67	67	68	69	70	72	72	73	72	70	71	72	76	74	—	69
Minimum	62	62	61	61	61	64	66	67	68	69	69	69	68	67	66	66	65	64	65	68	68	68	71	71	70	69	69	70	72	73	—	67
July																																
Maximum	74	72	72	72	74	74	73	73	73	74	74	74	74	74	76	76	76	75	74	72	72	71	72	72	74	74	74	73	72	71	70	73
Minimum	72	70	68	70	71	71	72	71	72	71	71	71	71	72	73	74	74	71	72	71	70	70	70	70	71	72	73	72	71	69	68	71
August																																
Maximum	70	69	69	68	70	71	72	72	73	73	72	72	72	75	77	78	77	77	77	75	73	73	72	72	72	72	72	72	71	70	68	72
Minimum	68	68	67	67	66	68	70	72	72	71	69	70	70	71	73	75	76	76	75	73	72	72	71	70	70	70	71	71	69	68	67	71
September																																
Maximum	68	68	68	68	68	70	70	70	71	73	73	71	70	70	70	70	70	71	71	73	74	74	74	73	70	69	66	64	64	64	—	70
Minimum	67	66	66	67	68	68	69	70	70	71	71	70	70	68	69	69	68	69	70	71	73	74	73	70	69	66	64	63	63	64	—	69

BEAVER RIVER BASIN--Continued

3-995. MAHONING RIVER AT LOWELLVILLE, OHIO

LOCATION.--On left bank, 600 feet upstream from Washington Street Bridge at Lowellville, Mahoning County, 300 feet upstream from gaging station located 1 mile upstream from Ohio-Pennsylvania State line, and 3 miles downstream from Yellow Creek.
DRAINAGE AREA.--1,076 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1953, October 1956 to September 1965.
Water temperatures: October 1943 to September 1944 (incomplete), October 1949 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 106°F July 9; minimum, 36°F Jan. 25.
EXTREMES, 1949-65.--Specific conductance (1951-53, 1956-64): Maximum daily, 1,200 micromhos Feb. 27, 1964; minimum daily, 160 micromhos Feb. 11, 1959.
Water temperatures: Maximum, 112°F Aug. 19, 1955; minimum, freezing point Dec. 5, 1960.

Specific conductance, pH, dissolved oxygen, and temperature, water year October 1964 to September 1965

Day	OCTOBER								NOVEMBER							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..			6.7	5.7	--	--	95	90	--	--	6.9	5.9			91	86
2..			6.7	6.0	--	--	95	92	--	--	6.7	5.3			92	86
3..			6.6	5.2	6.7	4.9	93	89	--	--	6.3	5.9			94	88
4..			6.8	5.3	--	--	91	89	--	--	6.4	4.9			96	89
5..			6.8	5.8	5.7	5.2	89	88	--	--	6.5	5.8			93	88
6..			6.4	4.8	--	--	88	87	--	--	6.6	5.8			90	86
7..			5.4	4.9	--	--	90	85	--	--	6.7	6.1			90	85
8..			6.2	4.7	--	--	90	86	--	--	6.7	6.5			91	88
9..			6.4	5.4	--	--	90	88	--	--	6.8	6.3			92	85
10..			6.4	6.3	--	--	88	84	960	900	6.5	6.3			93	88
11..			6.3	5.1	--	--	87	82	940	880	6.8	6.4			93	90
12..			6.3	5.1	--	--	90	82	900	890	6.8	6.2			92	89
13..			6.4	5.0	--	--	92	85	940	860	7.2	6.2			91	88
14..			5.9	5.0	--	--	94	87	980	880	6.5	6.4			90	87
15..			6.6	5.2	--	--	95	88	960	880	6.6	6.5			90	85
16..			7.1	6.2	--	--	96	92	1030	890	6.6	6.1			92	89
17..			6.9	6.5	--	--	97	93	1000	950	6.6	5.2			89	84
18..			6.9	6.1	--	--	94	90	970	900	6.5	5.5			86	84
19..			7.0	6.0	--	--	90	88	1020	860	6.4	6.0			88	84
20..			6.2	5.7	--	--	90	86	880	790	6.6	6.1			83	77
21..			6.5	4.8	--	--	93	84	--	--	--	--			79	75
22..			6.5	6.1	--	--	91	84	--	--	--	--			77	74
23..			6.5	5.1	--	--	90	86	1020	980	--	--			80	74
24..			6.4	5.1	--	--	88	85	--	--	--	--			84	78
25..			6.3	5.1	--	--	88	85	980	870	--	--			84	82
26..			6.5	5.4	--	--	92	87	900	760	--	--			80	75
27..			6.6	5.2	--	--	94	88	--	--	--	--			85	77
28..			6.3	5.2	--	--	94	91	--	--	--	--			84	81
29..			6.9	5.3	--	--	92	87	--	--	--	--			81	76
30..			--	--	-	--	90	84	--	--	--	--			78	75
31..			6.6	6.0	--	--	92	87	--	--	--	--			--	--

Day	DECEMBER								JANUARY							
	Specific conductance Max	Specific conductance Min	pH Max	pH Min	Dissolved oxygen Max	Dissolved oxygen Min	Temperature Max	Temperature Min	Specific conductance Max	Specific conductance Min	pH Max	pH Min	Dissolved oxygen Max	Dissolved oxygen Min	Temperature Max	Temperature Min
1..	980	--	7.3	6.8	0.4	0.0	79	75	840	760	7.0	6.8	0.3	0.0	66	63
2..	--	--	7.1	5.3	2.8	.0	80	74	860	570	7.1	6.7	--	--	63	54
3..	1060	980	7.1	5.7	.0	.0	81	77	670	640	7.4	7.1	--	--	54	46
4..	990	720	7.5	7.1	.9	.0	81	70	650	480	--	--	--	--	51	46
5..	880	720	7.4	7.1	--	--	70	68	560	480	--	--	--	--	56	48
6..	--	--	7.1	6.9	--	--	71	69	600	540	--	--	--	--	63	56
7..	950	--	7.3	7.0	--	--	71	68	620	590	--	--	--	--	66	61
8..	1000	840	7.4	7.3	4.6	.0	75	70	620	550	--	--	--	--	61	58
9..	1000	910	7.4	7.3	4.5	.3	76	71	550	480	--	--	--	--	58	52
10..	1060	960	7.3	7.1	1.0	.1	76	72	480	430	--	--	--	--	52	49
11..	1000	780	7.6	7.2	.9	.0	78	73	480	400	--	--	--	--	56	51
12..	820	760	7.7	7.1	2.0	.0	74	71	570	480	7.1	6.3	--	--	60	55
13..	860	800	7.1	6.9	2.7	.6	72	66	650	570	7.0	6.6	--	--	63	60
14..	820	780	7.0	6.7	--	.9	68	63	700	610	7.0	6.8	--	--	62	58
15..	880	820	7.3	7.0	3.7	--	65	62	730	700	7.2	7.0	--	--	63	60
16..	930	860	7.5	7.3	3.2	.6	70	63	870	690	6.8	6.5	--	--	63	61
17..	930	860	7.8	7.5	.6	.0	74	70	820	750	6.7	6.6	--	--	62	57
18..	1080	940	8.0	6.4	1.5	.0	70	63	800	760	6.9	6.7	2.1	.0	62	58
19..	1100	940	7.1	6.6	1.5	.7	70	63	820	770	7.1	6.8	2.9	2.5	61	55
20..	1100	1020	6.7	6.5	1.3	.0	74	70	930	620	7.0	6.0	--	--	66	55
21..	1110	1040	7.1	6.3	.4	.0	76	73	1100	900	6.7	5.5	--	--	72	64
22..	1080	1040	--	--	.6	.0	78	75	1010	930	6.4	6.0	--	--	75	70
23..	1140	860	6.6	--	1.6	.0	79	75	950	530	6.7	6.2	--	--	66	45
24..	1190	1050	6.3	--	.5	.0	81	78	530	440	--	--	--	--	45	39
25..	1050	670	6.8	--	1.0	.0	78	63	440	280	--	--	--	--	38	36
26..	720	540	7.2	6.3	2.2	.0	63	56	310	280	--	--	--	--	40	37
27..	610	540	7.4	7.1	--	--	56	53	380	310	--	--	--	--	42	40
28..	650	570	7.1	6.3	--	--	58	55	460	380	--	--	--	--	44	42
29..	690	630	6.5	6.3	--	--	63	57	510	450	--	--	--	--	48	44
30..	780	690	6.8	6.5	3.8	1.3	70	63	540	460	--	--	--	--	50	45
31..	820	780	6.9	6.6	2.3	1.1	70	66	600	520	--	--	--	--	50	48

BEAVER RIVER BASIN--Continued

3-995. MAHONING RIVER AT LOWELLVILLE, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1965 to September 1965--Continued

Day	FEBRUARY								MARCH							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	630	570	--	--			54	50	--	--					--	--
2..	640	600	--	--			56	53	--	--					--	--
3..	710	620	7.2	6.7			57	54	--	--					--	--
4..	760	690	7.4	6.4			58	54	--	--					--	--
5..	770	740	7.1	6.4			62	57	380	360					42	40
6..	850	730	--	--			64	62	400	350					41	40
7..	840	650	--	--			62	54	--	--					44	41
8..	650	540	--	--			54	46	--	--					44	42
9..	590	470	--	--			46	42	--	--					43	42
10..	470	400	--	--			46	44	380	350					43	41
11..	410	390	--	--			48	46	--	--					43	41
12..	420	400	--	--			48	47	--	--					--	--
13..	400	360	--	--			48	45	--	--					--	--
14..	360	340	--	--			45	43	430	400					--	--
15..	430	350	--	--			47	44	470	410					--	--
16..	480	430	--	--			50	46	500	450					--	--
17..	540	480	--	--			52	48	520	480					--	--
18..	550	530	--	--			54	50	550	500					--	--
19..	600	540	--	--			55	52	580	490					--	--
20..	630	590	--	--			56	52	550	500					--	--
21..	680	610	--	--			58	56	580	530					56	53
22..	--	--	--	--			--	--	590	520					59	54
23..	--	--	--	--			--	--	590	500					60	50
24..	--	--	--	--			--	--	560	520					50	48
25..	--	--	--	--			--	--	520	470					48	45
26..	--	--	--	--			--	--	--	--					47	46
27..	--	--	--	--			--	--	--	--					--	--
28..	--	--	--	--			--	--	--	--					--	--
29..	--	--	--	--			--	--	--	--					52	51
30..	--	--	--	--			--	--	--	--					54	51
31..	--	--	--	--			--	--	--	--					56	52

Day	APRIL								MAY							
1..	--	--	--	--	9.1	7.5	58	52	710	620	6.2	5.7	1.7	1.4	85	81
2..	--	--	--	--	8.4	7.0	58	52	720	680	6.8	6.1	--	--	90	84
3..	--	--	--	--	9.0	7.0	60	53	730	690	6.8	6.5	--	--	93	88
4..	--	--	--	--	9.6	7.8	57	52	770	690	6.6	6.3	--	--	94	90
5..	--	--	--	--	9.4	6.4	63	47	810	770	6.3	5.7	1.8	1.4	93	89
6..	--	--	--	--	--	--	63	61	950	810	5.9	4.7	1.3	1.1	96	91
7..	--	--	--	--	--	--	--	--	880	790	6.3	5.4	1.2	1.2	97	94
8..	--	--	--	--	--	--	--	--	850	790	6.6	5.9	2.1	.8	100	94
9..	450	400	6.3	6.0	9.8	8.2	64	63	830	760	6.4	5.9	2.7	.8	98	95
10..	520	420	6.4	5.9	9.6	8.0	68	63	790	740	6.8	6.2	2.4	.7	97	93
11..	550	470	6.3	5.8	8.0	7.3	70	67	740	620	6.6	6.1	2.7	.6	93	90
12..	540	490	6.5	6.2	8.4	6.8	70	66	770	630	6.4	5.2	--	--	93	90
13..	590	500	6.3	6.0	8.8	7.2	67	64	750	630	6.3	5.9	--	--	94	90
14..	560	520	6.4	5.8	7.7	5.8	72	66	820	690	6.5	5.6	--	--	96	90
15..	600	550	6.5	5.8	6.0	4.1	74	71	770	720	6.5	6.1	--	--	98	90
16..	610	550	6.3	5.8	4.9	3.6	72	70	810	720	6.3	5.8	--	--	94	91
17..	650	590	6.3	5.6	3.8	3.0	73	71	800	700	6.7	5.9	--	--	92	88
18..	620	530	6.5	5.7	3.0	2.4	71	61	720	660	6.6	5.7	--	--	93	87
19..	530	460	6.9	6.4	--	--	61	58	760	660	6.4	5.7	--	--	94	90
20..	500	480	6.8	6.2	--	--	64	61	770	680	6.5	5.8	--	--	96	88
21..	540	480	6.7	6.3	--	--	70	63	810	730	6.6	5.7	--	--	93	91
22..	600	540	6.5	6.2	--	--	75	70	800	750	6.6	5.9	--	--	96	92
23..	640	570	6.5	6.1	--	--	78	75	770	710	6.5	6.0	--	--	96	93
24..	700	580	6.3	5.4	--	--	76	75	750	730	7.0	5.9	--	--	94	92
25..	710	630	6.5	5.4	--	--	76	75	760	700	6.9	6.4	--	--	98	93
26..	710	640	6.5	5.9	3.0	1.2	76	74	790	760	6.6	5.6	--	--	100	94
27..	690	640	6.5	5.9	3.3	3.0	75	73	760	630	6.7	5.9	--	--	94	90
28..	700	630	6.4	5.4	3.1	2.6	76	72	760	660	6.4	5.5	--	--	95	90
29..	660	550	6.7	6.2	2.4	2.1	82	75	700	650	6.5	6.1	--	--	92	87
30..	670	600	6.4	6.2	2.1	1.7	82	79	710	660	6.9	5.7	--	--	91	86
31..	--	--	--	--	--	--	--	--	790	690	7.0	6.5	--	--	93	88

BEAVER RIVER BASIN--Continued

3-995. MAHONING RIVER AT LOWELLVILLE, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965--Continued

Day	JUNE								JULY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	750	700	6.9	6.2			98	92	660	640	6.7	6.3	--	--	100	93
2..	700	600	6.7	6.1			94	86	680	640	6.6	5.9	--	--	98	93
3..	690	560	6.7	6.2			86	80	650	620	6.6	6.2	--	--	97	92
4..	560	500	6.7	6.4			80	77	630	570	6.7	6.3	--	--	98	92
5..	510	490	6.6	6.5			86	76	640	590	6.9	6.1	--	--	98	93
6..	640	510	6.6	6.5			94	86	620	580	6.6	5.9	--	--	98	91
7..	670	600	6.8	6.3			95	93	650	600	6.8	6.1	--	--	97	93
8..	770	620	6.8	6.0			97	93	670	640	7.0	6.3	--	--	101	93
9..	770	670	6.6	5.9			99	90	680	590	6.7	6.2	--	--	106	96
10..	750	680	6.5	5.9			99	96	610	540	6.9	6.5	--	--	96	87
11..	680	650	6.6	5.7			100	93	620	590	6.8	6.4	--	--	94	90
12..	740	680	6.6	5.7			99	94	620	570	6.9	6.6	--	--	96	89
13..	740	680	6.9	6.1			97	93	630	600	7.0	6.7			99	92
14..	760	680	6.9	6.3			96	91	660	600	6.8	6.5	--	--	102	96
15..	740	700	6.7	6.0			93	91	630	600	6.9	6.8	--	--	100	97
16..	730	700	6.6	6.0			94	90	640	620	6.9	6.8	--	--	103	96
17..	760	690	6.6	5.9			94	90	640	570	7.2	6.9	--	--	102	96
18..	790	730	6.6	5.5			95	90	610	550	7.2	7.1	--	--	98	94
19..	730	680	6.8	6.2			95	92	630	610	7.2	7.1	--	--	98	93
20..	730	690	7.0	6.5			96	92	670	610	7.1	6.7	--	--	96	90
21..	740	670	6.9	6.0			96	94	640	610	6.9	6.7	--	--	97	93
22..	740	680	6.5	5.8			100	94	640	580	7.0	6.9	--	--	95	93
23..	750	660	6.4	5.8			101	96	620	580	7.0	6.9	--	--	99	93
24..	740	660	6.4	5.2			98	93	590	550	7.2	7.0	--	--	100	94
25..	740	700	6.4	5.8			100	93	560	520	7.3	7.2	--	--	96	93
26..	710	690	6.5	5.9			98	93	620	550	7.3	7.2	--	--	98	93
27..	740	690	6.6	6.0			99	93	600	550	7.2	6.6	--	--	96	93
28..	690	650	6.5	6.0			99	96	630	570	7.0	6.5	3.9	2.1	100	95
29..	610	580	6.7	6.3			99	93	620	590	6.7	6.4	3.9	2.8	98	95
30..	660	610	6.7	6.4			99	94	620	590	7.2	6.5	3.9	2.8	100	94
31..	--	--	--	--			--	--	620	560	6.9	6.5	3.9	1.5	99	94

Day	AUGUST								SEPTEMBER							
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	620	580	7.0	6.5	3.8	1.3	94	92	600	470	8.0	6.9			84	76
2..	580	530	7.2	6.5	5.1	1.2	92	90	600	540	7.2	6.5			86	81
3..	590	540	6.8	5.9	4.8	3.6	94	90	610	560	7.1	6.7			86	82
4..	610	560	6.9	6.4	4.1	1.6	94	91	680	610	7.5	7.0			89	84
5..	630	600	6.9	6.7	4.3	1.5	98	91	730	680	7.4	7.0			88	86
6..	670	610	6.9	6.5	3.3	1.2	100	93	730	680	7.4	7.0			91	87
7..	680	590	7.0	6.6	4.2	1.5	99	91	730	670	7.1	6.7			94	88
8..	630	580	7.2	6.9	3.6	1.3	95	92	--	--	7.0	6.0			94	91
9..	650	580	7.2	6.9	4.0	1.6	99	90	--	--	7.0	6.6			97	94
10..	680	650	7.2	6.8	6.1	1.6	98	93	--	--	7.1	6.5			99	94
11..	--	--	--	--	--	--	--	--	--	--	7.3	6.5			96	91
12..	--	--	--	--	--	--	--	--	--	--	7.2	7.1			92	88
13..	--	--	--	--	--	--	--	--	760	680	7.2	6.1			92	88
14..	--	--	--	--	--	--	--	--	740	680	6.7	6.4			96	90
15..	--	--	--	--	--	--	--	--	780	740	6.9	6.3			96	92
16..	--	--	--	--	--	--	--	--	770	730	6.9	6.2			94	90
17..	--	--	--	--	--	--	--	--	770	700	7.4	6.5			99	92
18..	--	--	--	--	--	--	--	--	790	760	7.1	6.6			98	95
19..	--	--	--	--	--	--	--	--	--	--	--	--			--	--
20..	--	--	--	--	--	--	--	--	--	--	--	--			--	--
21..	--	--	--	--	--	--	--	--	--	--	--	--			--	--
22..	--	--	--	--	--	--	--	--	770	690	6.8	6.3			102	95
23..	--	--	--	--	--	--	--	--	760	700	6.9	6.4			101	99
24..	--	--	--	--	--	--	--	--	750	710	7.2	6.6			--	--
25..	--	--	--	--	--	--	--	--	770	700	7.2	6.8			94	90
26..	--	--	--	--	--	--	--	--	790	720	7.3	6.6			--	--
27..	700	620	7.0	6.1	2.8	1.7	100	90	820	730	7.1	6.4			89	85
28..	680	440	7.5	6.4	4.6	2.1	94	89	850	730	7.0	6.4			--	--
29..	680	630	7.4	6.8	4.6	2.4	90	86	760	730	7.0	6.5			90	85
30..	710	640	7.1	6.1	3.6	3.2	93	87	830	730	6.8	6.0			96	89
31..	680	540	7.2	6.4	3.7	3.3	92	84	--	--	--	--			--	--

BEAVER RIVER BASIN--Continued

3-1075. BEAVER RIVER AT BEAVER FALLS, PA.

LOCATION.--On left bank at intake line to Ohio River Valley Water Sanitation Commission (ORSANCO) monitor at Beaver Falls filtration plant, Beaver County, 0.5 miles downstream from bridge on State Route 588.
DRAINAGE AREA.--3,106 square miles (at gaging station).
RECORDS AVAILABLE.--Chemical analyses: July 1963 to September 1965.
Water temperatures: July 1963 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 687 micromhos Oct. 13; minimum daily, 229 micromhos Jan. 26.
Water temperatures: Maximum, 85°F July 16, 18; minimum, 33°F Jan. 31, Feb. 2.
EXTREMES, 1963-65.--Specific conductance: Maximum daily, 781 micromhos Jan. 7, 1964; minimum daily, 203 micromhos Mar. 7, 1964.
Water temperatures: Maximum, 87°F July 26, 28-30, 1964; minimum, 33°F Jan. 31, Feb. 2, 1965.
REMARKS.--Values reported for acidity are potential free except as footnoted. All acidity values are determined to pH 7.0. Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) minimum daily pH for each month, and (4) maximum daily specific conductance for each 10-day period.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total Acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Oct. 1, 1964.	739			--	--	57	13				10	0	170	42	0.9	19	--	349	196	188	--	566	5.9		--
Oct. 4.......	997			--	--	--	--				--	--	208	--	--	--	0.28	--	--	--	--	645	4.4		0.3
Oct. 13......	749			0.68	0.99	66	18				0	0	226	44	1.1	18	--	432	239	239	0.1	687	4.4		--
Oct. 26......	737			--	--	--	--				--	--	202	--	--	--	.12	--	--	--	--	615	6.0		.4
Nov. 2.......	863			--	--	67	16				10	0	218	50	1.0	19	--	446	233	225	--	679	5.7		--
Nov. 10......	870			.51	.78	--	--				--	--	--	--	--	--	--	--	--	--	.1	640	4.7		--
Nov. 11......	870			--	--	--	--				--	--	184	--	--	--	.22	--	--	--	--	601	5.8		.3
Nov. 23......	968			--	--	--	--				--	--	200	--	--	--	.27	--	--	--	--	652	7.2		.2
Nov. 30......	1150			--	--	57	13				30	0	153	42	.8	15	--	352	196	171	--	549	6.3		--
Dec. 4.......	1470			.93	.14	--	--				--	--	--	--	--	--	--	--	--	--	.0	556	6.0		--
Dec. 5.......	3700			--	--	60	13				18	0	167	52	.7	20	--	369	203	188	--	598	7.0		--
Dec. 12......	6180			--	--	--	--				--	--	137	--	--	--	.22	--	--	--	--	487	7.2		.1
Dec. 26......	6730			--	--	--	--				--	--	162	--	--	--	.20	--	--	--	--	535	6.5		.1
Dec. 28......	7140			--	--	31	7.4				30	0	73	20	.3	7.0	--	179	108	84	--	298	6.8		--
Jan. 1, 1965.	3100			--	--	--	--				--	--	94	--	--	--	.21	--	--	--	--	318	5.4		.1
Jan. 20......	1950			--	--	--	--				--	--	126	--	--	--	.17	--	--	--	--	447	6.5		.1
Jan. 23......	5710			2.2	.77	48	13				16	0	146	34	.5	12	--	314	174	161	.0	483	6.1		--
Jan. 26......	21000			--	--	24	5.6				24	0	60	14	.2	5.0	--	170	83	64	--	229	6.5		--
Feb. 5.......	2190			1.4	.66	--	--				--	--	126	--	--	--	--	--	--	--	.0	427	6.3		--
Feb. 7.......	3460			--	--	48	13				5	0	143	28	.4	11	--	272	174	170	--	465	6.3		--
Feb. 20......	2880			--	--	--	--				--	--	109	--	--	--	.25	--	--	--	--	386	6.6		.1
Feb. 25......	11600			--	--	--	--				--	--	121	--	--	--	.24	--	--	--	--	448	7.2		.1
Feb. 28......	9780			--	--	27	6.3				22	0	67	19	.3	6.4	--	152	94	76	--	261	7.2		--

BEAVER RIVER BASIN--Continued

3-1075. BEAVER RIVER AT BEAVER FALLS, PA.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total Acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Mar. 2, 1965.	10100			0.66	0.44	--	--				--	--	--	--	--	--	--	--	--	--	0.0	290	6.3		--
Mar. 5.......	17300			--	--	--	--				--	--	76	--	--	--	0.24	--	--	--	--	304	6.6		0.1
Mar. 6.......	17900			--	--	29	7.4				31	0	65	20	0.4	5.7	--	177	103	78	--	276	6.5		--
Mar. 19......	5990			--	--	--	--				--	--	88	--	--	--	.24	--	--	--	--	341	7.0		.1
Mar. 23......	5420			--	--	36	9.9				31	0	91	28	.5	7.3	--	220	131	105	--	351	7.2		--
Apr. 1.......	4900			--	--	32	8.8				32	0	80	21	.5	7.2	--	190	116	90	--	309	7.2		--
Apr. 3.......	4670			.83	.06	--	--				--	--	--	--	--	--	--	--	--	--	A.0	335	6.6		--
Apr. 8.......	5200			--	--	--	--				--	--	100	--	--	--	.30	--	--	--	--	401	7.6		.1
Apr. 19......	5490			--	--	--	--				--	--	103	--	--	--	.25	--	--	--	--	394	6.7		.1
Apr. 29......	2590			--	--	45	11				43	0	111	29	.9	9.3	--	272	157	122	--	423	7.3		--
May 1........	2180			--	--	41	11				41	0	106	26	.4	7.8	--	264	147	114	--	395	7.5		--
May 9........	2050			--	--	--	--				--	--	167	--	--	--	.16	--	--	--	--	553	7.5		.1
May 10.......	1950			.30	.27	--	--				--	--	--	--	--	--	--	--	--	--	A.0	519	7.0		--
May 19.......	1540			--	--	--	--				--	--	170	--	--	--	.22	--	--	--	--	572	7.3		.1
May 27.......	1570			--	--	59	16				34	0	167	42	1.1	14	--	376	213	185	--	583	7.1		--
June 3.......	3410			--	--	--	--				--	--	125	--	--	--	.42	--	--	--	--	500	6.6		.1
June 5.......	2880			--	--	40	8.3				46	0	82	22	.6	8.0	--	224	134	96	--	354	7.7		--
June 20......	846			--	--	--	--				--	--	170	--	--	--	.18	--	--	--	--	598	6.5		.1
June 21......	810			.91	1.2	--	--				--	--	--	--	--	--	--	--	--	--	.0	610	6.3		--
June 27......	858			--	--	65	16				34	0	173	46	1.2	13	--	390	228	200	--	622	7.4		--
July 1.......	762			--	--	63	13				19	0	171	54	1.7	20	--	390	211	195	--	619	6.3		--
July 6.......	822			.66	.00	--	--				--	--	--	--	--	--	--	--	--	--	A.0	592	6.1		--
July 13......	1000			--	--	56	12				46	0	140	36	1.2	11	--	330	189	152	--	514	7.1		--
July 17......	840			--	--	--	--				--	--	161	--	--	--	.22	--	--	--	--	582	6.7		.1
July 24......	1000			--	--	--	--				--	--	169	--	--	--	.17	--	--	--	--	589	7.2		.1
Aug. 3.......	1100			--	--	--	--				--	--	159	--	--	--	.20	--	--	--	--	580	7.2		.1
Aug. 5.......	953			--	--	55	12				24	0	147	45	.7	7.7	--	296	187	167	--	519	6.5		--
Aug. 13......	798			--	--	64	15				37	0	171	55	1.2	13	--	360	221	191	--	627	6.5		--
Aug. 22......	780			.99	.01	--	--				--	--	--	--	--	--	--	--	--	--	A.0	622	6.1		--
Aug. 23......	867			--	--	--	--				--	--	172	--	--	--	.28	--	--	--	--	624	6.4		.1
Sept. 1......	3840			.61	.00	--	--				--	--	158	--	--	--	.28	--	--	--	A.0	562	6.4		.1
Sept. 5......	1330			--	--	50	10				36	0	125	28	.5	9.8	.17	233	166	137	--	445	3.3		.1
Sept. 16.....	909			--	--	--	--				--	--	156	--	--	--	.20	--	--	--	--	587	7.5		.1
Sept. 24.....	846			--	--	65	14				32	0	168	52	1.2	20	.39	384	220	194	--	622	7.4		.1

A Total potential free acidity.

BEAVER RIVER BASIN--Continued

3-1075. BEAVER RIVER AT BEAVER FALLS, PA.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement between 0700 and 0800)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	566	618	543	348	341	283	309	395	463	619	567	562
2.....	566	679	538	313	364	290	323	405	482	607	562	506
3.....	588	619	552	313	382	297	335	421	500	576	580	413
4.....	645	602	556	310	407	302	344	437	438	578	546	406
5.....	591	605	598	305	427	304	348	456	354	582	519	445
6.....	615	606	494	308	450	276	354	478	354	592	561	438
7.....	628	601	433	318	465	276	372	497	354	575	541	486
8.....	593	603	457	333	441	281	401	515	368	560	548	519
9.....	599	602	478	313	309	290	379	553	418	561	568	543
10.....	621	640	466	290	297	297	351	519	402	573	551	554
11.....	636	601	473	282	281	290	367	445	428	570	575	563
12.....	675	584	487	293	285	292	377	476	455	574	566	553
13.....	687	581	348	308	299	302	387	474	474	514	627	565
14.....	629	588	352	330	294	309	376	476	471	--	621	581
15.....	611	588	352	345	285	320	377	469	495	547	606	571
16.....	617	584	336	359	323	329	386	484	526	552	600	587
17.....	621	589	362	366	347	335	387	509	552	582	597	606
18.....	617	572	381	382	368	338	394	538	577	582	612	610
19.....	626	577	411	426	374	341	394	572	583	569	611	622
20.....	609	595	436	447	386	332	344	513	598	581	613	627
21.....	602	626	455	461	395	332	351	484	610	558	623	642
22.....	599	630	463	473	414	341	348	499	621	548	622	640
23.....	604	652	495	483	432	351	365	510	614	559	624	614
24.....	599	610	506	310	444	329	380	541	616	589	623	622
25.....	607	597	512	251	448	307	397	557	619	569	610	621
26.....	615	594	535	229	312	304	422	570	616	568	604	622
27.....	609	553	352	236	267	312	422	583	622	536	573	605
28.....	600	563	298	244	261	307	420	555	520	522	582	657
29.....	602	578	300	261	--	307	423	524	622	528	589	645
30.....	595	549	313	277	--	312	400	484	622	537	589	644
31.....	600	--	330	310	--	312	--	476	--	531	594	--
Average	612	599	439	329	360	309	374	497	515	564	587	568

BEAVER RIVER BASIN--Continued

3-1075. BEAVER RIVER AT BEAVER FALLS, PA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 0700 and 0800)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	73	69	69	69	70	68	66	63	63	63	63	61	61	61	61	63	63	62	62	62	63	61	61	61	61	60	60	60	61	61	63	63
November	63	63	61	61	60	60	62	61	62	61	61	62	62	62	62	63	63	61	59	60	59	58	48	47	45	46	50	51	50	48	—	58
December	47	46	46	44	44	44	42	42	40	40	41	41	41	43	42	40	40	39	39	39	39	39	40	42	44	46	45	44	43	43	43	42
January	43	43	42	41	39	39	39	40	40	40	40	40	39	39	38	38	36	35	35	34	35	37	39	37	40	37	38	37	35	34	33	38
February	—	33	34	34	35	35	35	40	35	38	40	41	41	40	39	39	40	41	41	40	39	39	38	38	39	37	36	35	—	—	—	38
March	37	37	41	41	42	42	42	40	40	41	39	39	39	40	40	42	43	42	42	42	41	39	42	40	41	41	40	41	43	42	43	41
April	43	45	44	46	46	47	47	48	—	56	58	—	—	—	—	—	—	—	52	52	53	55	56	56	56	57	57	57	57	58	—	—
May	60	59	59	68	70	70	72	72	72	77	78	77	77	75	73	73	74	74	75	74	74	74	74	74	75	76	76	77	78	79	74	73
June	72	72	73	72	73	74	—	75	75	77	—	75	79	—	—	76	76	74	78	78	78	79	80	81	81	80	81	81	81	81	—	77
July	81	81	82	82	82	82	83	82	83	83	83	84	83	—	84	85	84	85	82	84	82	82	82	83	82	82	84	82	82	82	82	83
August	82	82	81	79	79	79	78	80	80	80	81	80	80	80	80	81	—	—	83	84	84	84	82	80	80	80	80	80	79	79	76	80
September	75	74	68	69	70	74	75	74	76	76	76	77	78	80	78	76	76	78	77	80	84	—	84	83	81	80	—	70	79	78	—	77

OHIO RIVER MAIN STEM

3-1107. OHIO RIVER AT STRATTON, OHIO
(Formerly published as 3-1096. Ohio River at East Liverpool, Ohio)

LOCATION.--At intake line to Ohio River Valley Water Sanitation Commission monitor at W. H. Sammis Plant of Ohio Edison Company at Stratton, Jefferson County.
DRAINAGE AREA.--23,500 square miles (approximately).
RECORDS AVAILABLE.--Chemical analyses (revised): January 1961 to June 1963 (at New Cumberland Dam), July 1963 to October 1964 (at East Liverpool), November 1964 to September 1965.
Water temperatures (revised): January 1961 to June 1963 (at New Cumberland Dam), July 1963 to October 1964 (at East Liverpool), November 1964 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 771 micromhos Oct. 17; minimum daily, 203 micromhos Feb. 15.
Water temperatures: Maximum, 86°F July 17; minimum, 33°F Feb. 2,3.
EXTREMES, 1961-65.--Specific conductance: Maximum daily, 771 micromhos Oct. 17, 1964; minimum daily, 150 micromhos Mar. 8, 1964.
Water temperatures: Maximum, 86°F July 17, 1965; minimum, freezing point on several days during winter months in 1962 and 1963.
REMARKS.--All values reported for acidity are determined to pH 7.0. Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) maximum daily specific conductance for each 10-day period, and (4) minimum daily pH for each month. This station was moved from East Liverpool in November 1964 and quality of water at two sites are considered comparable.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Oct. 4, 1964..				--	--	51	15				4	0	212	38	0.8	13	--	390	189	186	A0.1	609	5.4		--
Oct. 10.......				--	--	--	--				--	--	267	--	--	--	0.49	--	--	--	--	693	4.7		0.2
Oct. 17.......				0.94	2.6	64	20				0	0	294	32	.7	10	--	500	242	242	A.2	771	4.1		--
Oct. 27.......				--	--	--	--				--	--	278	--	--	--	.09	--	--	--	--	759	4.1		.2
Nov. 6........				--	--	57	14				0	0	232	36	.8	13	--	408	200	200	A.1	701	4.5		--
Nov. 12.......				.51	2.0	--	--				--	--	238	--	--	--	.09	--	--	--	--	670	4.4		.0
Nov. 19.......				--	--	54	16				4	0	223	41	.8	14	--	414	201	198	A.1	634	5.9		--
Nov. 28.......				--	--	61	18				2	0	272	32	.6	10	--	480	226	225	A.1	703	4.9		--
Dec. 1........				.80	2.1	48	14				2	0	200	35	.5	7.9	--	352	178	176	A.0	542	5.4		--
Dec. 11.......				--	--	--	--				--	--	108	--	--	--	.06	--	--	--	--	333	5.9		.1
Dec. 19.......				--	--	21	5.8				10	0	68	16	.3	4.3	--	151	76	68	--	230	6.2		--
Dec. 26.......				--	--	--	--				--	--	95	--	--	--	.05	--	--	--	--	300	6.1		.1
Jan. 4, 1965..				--	--	--	--				--	--	87	--	--	--	.04	--	--	--	--	267	6.1		.0
Jan. 13.......				--	--	19	6.2				10	0	67	13	.1	3.0	--	132	73	65	--	212	6.8		--
Jan. 20.......				--	--	--	--				--	--	97	--	--	--	.04	--	--	--	--	282	6.7		.0
Jan. 23.......				1.5	.06	28	9.4				6	0	109	15	.2	5.2	--	199	109	104	--	313	5.9		--
Feb. 6........				1.9	.68	--	--				--	--	--	--	--	--	--	--	--	--	A.0	295	5.8		--
Feb. 9........				--	--	28	12				12	0	109	24	.2	2.7	--	209	120	110	--	351	6.8		--
Feb. 11.......				--	--	--	--				--	--	80	--	--	--	.11	--	--	--	--	253	6.6		.0
Feb. 15.......				--	--	18	6.2				9	0	65	10	.0	2.9	--	118	70	63	--	203	6.2		--
Feb. 27.......				--	--	--	--				--	--	91	--	--	--	.17	--	--	--	--	298	6.4		.1

A Potential free.

OHIO RIVER MAIN STEM--Continued

3-1107. OHIO RIVER AT STRATTON, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Mar. 3, 1965..				--	--	30	9.2				11	0	99	28	0.1	4.4	--	204	113	104	--	322	6.4		--
Mar. 9.......				--	--	23	6.4				15	0	67	18	.1	3.5	--	168	84	72	--	238	6.8		--
Mar. 19.......				0.64	0.38	--	--				--	--	--	--	--	--	--	--	--	--	0.1	296	6.2		--
Mar. 20.......				--	--	--	--				--	--	98	--	--	--	0.08	--	--	--	--	319	6.9		0.1
Mar. 25.......				--	--	--	--				--	--	91	--	--	--	.08	--	--	--	--	311	6.9		.1
Apr. 9.......				--	--	30	6.1				8	0	88	14	.2	1.8	--	188	100	94	--	279	6.9		--
Apr. 13.......				--	--	23	5.4				11	0	69	12	.1	3.0	--	138	80	70	--	225	6.8		--
Apr. 15.......				.54	.20	--	--				--	--	88	--	--	--	.20	--	--	--	.0	249	6.3		.0
Apr. 28.......				--	--	--	--				--	--	88	--	--	--	.08	--	--	--	--	265	6.4		.1
May 4.........				--	--	22	8.4				12	0	85	11	.2	2.9	--	175	90	80	--	251	7.2		--
May 10.......				--	--	--	--				--	--	96	--	--	--	.17	--	--	--	--	291	6.4		.0
May 11.......				--	--	--	--				--	--	90	--	--	--	.20	--	--	--	--	287	7.3		.0
May 28.......				.07	.38	--	--				--	--	--	--	--	--	--	--	--	--	.0	331	6.4		--
May 29.......				--	--	28	10				14	0	115	18	.3	4.8	--	227	111	100	--	350	6.7		--
June 1.......				--	--	35	9.5				14	0	124	32	.4	4.8	--	260	127	115	--	388	6.4		--
June 5.......				.12	.98	--	--				--	--	150	--	--	--	.34	--	--	--	.0	432	6.3		.0
June 19.......				--	--	--	--				--	--	134	--	--	--	.35	--	--	--	--	432	6.6		.0
June 30.......				--	--	42	11				20	0	145	42	.5	7.2	--	302	150	134	--	467	6.5		--
July 1.......				--	--	44	10				20	0	149	32	.6	9.4	--	322	151	135	--	476	6.6		--
July 10.......				--	--	--	--				--	--	183	--	--	--	.12	--	--	--	--	546	7.0		.1
July 13.......				--	--	--	--				--	--	196	--	--	--	.14	--	--	--	--	572	6.2		.1
July 15.......				.28	1.1	--	--				--	--	--	--	--	--	--	--	--	--	.2	563	6.0		--
July 31.......				--	--	59	14				12	0	224	36	.7	11	--	454	205	195	--	639	6.2		--
Aug. 3.......				--	--	52	18				12	0	224	36	.6	10	--	420	204	194	--	641	6.1		--
Aug. 9.......				--	--	--	--				--	--	249	--	--	--	.12	--	--	--	--	690	7.0		.1
Aug. 20.......				--	--	--	--				--	--	259	--	--	--	.09	--	--	--	--	707	6.2		.1
Aug. 23.......				.16	1.9	--	--				--	--	--	--	--	--	--	--	--	--	.1	711	6.0		--
Aug. 31.......				--	--	61	19				10	0	259	44	.7	12	--	479	230	222	--	728	6.1		--
Sept. 1.......				.12	2.0	61	19				9	0	265	46	.7	11	--	501	230	223	.0	745	5.9		--
Sept. 11......				--	--	--	--				--	--	252	--	--	--	.05	--	--	--	--	699	6.8		.1
Sept. 21......				--	--	52	16				20	0	189	42	.5	7.7	--	369	196	179	--	599	7.1		--
Sept. 30......				--	--	--	--				--	--	243	--	--	--	.05	--	--	--	--	700	7.0		.1

OHIO RIVER MAIN STEM--Continued

3-1107. OHIO RIVER AT STRATTON, OHIO--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	610	699	542	--	241	303	245	272	388	476	--	745
2.....	612	694	498	263	253	311	236	--	394	480	643	710
3.....	610	--	479	--	264	322	239	256	402	489	641	714
4.....	609	--	481	267	273	306	--	251	411	--	650	718
5.....	613	647	497	252	293	303	239	251	432	--	653	--
6.....	652	701	--	242	295	308	245	253	--	504	668	--
7.....	--	--	426	241	--	--	257	256	401	522	677	713
8.....	--	--	398	246	321	253	263	270	408	530	--	724
9.....	659	697	359	258	351	238	279	--	--	537	690	736
10....	693	686	356	--	280	270	259	291	400	546	689	723
11....	726	667	333	244	253	241	--	287	395	--	685	699
12....	750	670	327	227	241	249	234	280	391	565	679	--
13....	--	646	--	212	226	254	225	262	--	572	677	672
14....	--	--	321	215	--	--	247	--	391	571	680	665
15....	766	--	284	232	203	268	249	251	396	563	--	662
16....	769	648	265	244	207	276	--	--	407	566	688	651
17....	771	637	240	--	208	287	237	260	421	565	698	641
18....	756	635	--	267	216	294	--	266	426	--	701	635
19....	752	634	230	273	222	296	244	270	432	569	704	--
20....	747	646	--	282	231	319	247	278	--	570	707	603
21....	738	648	254	295	--	--	237	278	424	573	714	599
22....	720	--	267	310	248	291	230	284	420	570	--	621
23....	--	662	267	313	260	291	252	--	415	580	711	611
24....	726	678	290	--	277	298	242	296	412	591	711	610
25....	741	695	--	300	288	311	--	296	408	--	712	620
26....	745	--	300	265	284	306	239	308	419	601	715	--
27....	759	667	--	254	298	289	249	319	--	602	715	672
28....	753	703	288	249	--	--	265	331	452	610	715	--
29....	741	--	273	227	--	258	249	350	460	621	--	609
30....	722	609	252	232	--	272	256	--	467	631	719	700
31....	697	--	250	--	--	248	--	--	--	639	728	--
Average	709	--	339	256	260	284	246	--	415	564	691	--

OHIO RIVER MAIN STEM--Continued

3-1107. OHIO RIVER AT STRATTON, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	69	70	69	70	68	66	--	--	66	64	63	62	--	--	62	62	62	62	62	63	62	60	--	60	60	60	60	64	60	60	60	63
November	60	60	--	--	60	60	60	--	61	61	62	62	62	62	--	62	62	61	60	59	57	--	56	56	56	--	62	54	--	51	--	--
December	50	49	48	47	47	--	46	45	44	44	47	48	--	42	40	40	42	--	39	--	40	40	40	43	--	45	--	47	47	--	--	--
January	--	42	--	49	40	40	40	41	43	--	40	40	41	39	38	37	--	37	35	35	35	37	38	--	39	38	36	36	35	34	--	--
February	34	33	33	34	35	36	--	38	40	40	39	40	41	--	40	39	40	41	41	41	--	40	39	40	41	38	37	--	--	--	--	--
March	40	41	44	44	44	42	--	42	42	42	42	42	42	--	42	42	44	43	45	45	--	42	44	43	43	45	43	--	47	47	47	44
April	47	47	47	--	47	49	50	52	54	54	--	55	54	54	55	--	54	--	54	52	52	54	55	54	--	55	54	57	56	57	--	--
May	58	--	60	61	62	62	64	66	--	70	71	71	72	--	71	--	72	71	71	72	72	71	--	72	74	74	75	74	74	--	--	--
June	74	76	74	74	75	--	77	76	--	77	76	78	--	77	78	77	78	77	75	--	72	77	79	76	78	78	--	81	80	80	--	--
July	79	80	81	--	--	85	82	82	82	82	--	82	83	83	84	83	86	--	82	80	80	82	82	81	--	80	81	81	81	80	75	82
August	--	81	80	79	79	80	79	--	81	80	79	79	80	80	--	82	84	85	84	82	81	--	84	82	82	82	82	81	--	78	81	80
September	79	75	76	76	--	--	77	77	77	78	77	--	77	77	78	76	78	78	--	79	80	80	81	81	78	--	76	--	76	77	--	--

MUSKINGUM RIVER BASIN

3-1290. TUSCARAWAS RIVER AT NEWCOMERSTOWN, OHIO

LOCATION.--At gaging station at highway bridge, 0.8 mile south of Newcomerstown, Tuscarawas County, 2 miles upstream from Buckhorn Creek, and 4 miles downstream from Dunlap Creek.
DRAINAGE AREA.--2,436 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1946 to September 1948, October 1955 to September 1959, October 1960 to September 1965 (discontinued).
Chloride: July 1946 to May 1949, October 1957 to September 1965 (discontinued).
Hardness: October 1957 to September 1960 (discontinued).
Specific conductance: July 1946 to September 1948, October 1955 to September 1965 (discontinued).
Water temperatures: July 1946 to May 1949, October 1955 to September 1965 (discontinued).
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 4,510 micromhos Oct. 3; minimum daily, 645 micromhos Jan. 25.
Water temperatures: Maximum, 86°F Aug. 16; minimum, freezing point on many days during December to February.
EXTREMES, 1946-49, 1955-65.--Specific conductance: Maximum daily, 6,530 micromhos Sept. 21, 1948; minimum daily, 230 micromhos Mar. 6, 1963.
Water temperatures: Maximum, 86°F Aug. 22, 1959, Aug. 16, 1965; minimum, freezing point on many days during winter months.
REMARKS.--Samples for iron and manganese filtered clear when collected. Daily samples were collected at this station and samples were selected for analysis as follows: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) special sample each month to further define the quality of water, and (4) composite analysis of all daily samples. No special sample was collected for the month of September. Ohio Canal diverts water above station; part of diverted water flows into Cuyahoga River basin. Flow regulated by eight flood-control reservoirs.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$ Calcium, magnesium	Hardness as $CaCO_3$ Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed Filtered	Oxygen consumed Unfiltered
Oct. 3, 1964.	370			--	--						115	0	233	1290	4.2	12	--	3160	1060	966		4510	7.9		--	--
Oct. 29......	659			0.01	0.85						--	--	--	--	--	--	0.49	--	--	--		--	--		3	3
Oct. 31......	839			--	--						113	0	210	500	1.8	11	--	1470	548	455		2160	7.4		--	--
Oct. 1-31....	419			--	--						140	0	218	930	3.1	15	--	2530	900	785		3500	7.7		--	--
Nov. 18......	442			--	--						153	0	247	960	2.9	9.0	--	2500	944	818		3620	7.4		--	--
Nov. 23......	492			.57	1.7						--	--	--	--	--	--	.14	--	--	--		--	--		3	3
Nov. 29......	1510			--	--						93	0	198	300	.9	5.2	--	940	458	382		1480	7.2		--	--
Nov. 1-30....	620			--	--						135	0	222	670	1.9	10	--	1730	690	580		2680	7.8		--	--
Dec. 17......	2880			1.2	.87						--	--	--	--	--	--	.07	--	--	--		--	--		2	3
Dec. 23......	1120			--	--						80	0	198	550	.9	7.2	--	1540	624	558		2250	7.2		--	--
Dec. 28......	5200			--	--						46	0	148	100	.6	5.4	--	488	255	217		732	7.2		--	--
Dec. 1-31....	2769			--	--						70	0	177	240	.7	5.8	--	708	374	316		1190	7.4		--	--
Jan. 20, 1965	1400			.82	1.6						--	--	--	--	--	--	.05	--	--	--		--	--		3	4
Jan. 23......	2080			--	--						82	0	191	322	1.0	11	--	1030	458	391		1540	7.5		--	--
Jan. 25......	8940			--	--						90	0	114	78	.6	8.3	--	394	246	172		645	7.6		--	--
Jan. 1-31....	4170			--	--						67	0	160	192	.6	11	--	686	346	291		1100	7.2		--	--
Feb. 16......	3870			--	--						60	0	150	485	.3	9.3	--	1320	586	537		1970	6.7		--	--
Feb. 23......	2100			1.9	1.8						--	--	--	--	--	--	.19	--	--	--		--	--		1	2
Feb. 27......	9350			--	--						44	0	95	108	.3	7.0	--	418	212	176		651	6.7		--	--
Feb. 1-28....	4425			--	--						60	0	154	262	.2	8.5	--	886	408	359		1290	6.9		--	--

MUSKINGUM RIVER BASIN--Continued

3-1290. TUSCARAWAS RIVER AT NEWCOMERSTOWN, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Alu-mi-num (Al)	Iron (Fe)	Man-ga-nese (Mn)	Cal-cium (Ca)	Mag-ne-sium (Mg)	Sodium (Na)	Po-tas-sium (K)	Lith-ium (Li)	Bi-car-bon-ate (HCO_3)	Car-bon-ate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluo-ride (F)	Ni-trate (NO_3)	Phos-phor-us as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Cal-cium, mag-nesium	Hardness as $CaCO_3$: Non-car-bon-ate	To-tal acid-ity as H^{+1}	Specific conduct-ance (micro-mhos at 25°C)	pH	Col-or	Oxygen consumed: Fil-tered	Oxygen consumed: Un-fil-tered
Mar. 1, 1965.	7840			--	--						42	0	134	102	0.4	6.7	--	430	248	214		690	7.0		--	--
Mar. 12......	4160			--	--						71	0	136	375	.4	8.0	--	1050	497	439		1600	8.1		--	--
Mar. 25......	6880			0.99	1.3						--	--	--	--	--	--	0.08	--	--	--		--	--		1	6
Mar. 1-31....	4853			--	--						71	0	149	227	.4	8.0	--	744	374	316		1150	7.5		--	--
Apr. 2.......	4100			--	--						63	0	148	145	.4	5.6	--	590	318	266		912	7.3		--	--
Apr. 19......	2900			--	--						70	0	171	900	.5	5.7	--	2520	968	910		3160	7.7		--	--
Apr. 22......	2270			.19	1.5						--	--	--	--	--	--	.15	--	--	--		--	--		2	3
Apr. 1-30....	3216			--	--						67	0	170	260	.6	7.2	--	892	402	347		1240	7.5		--	--
May 1........	2580			--	--						75	0	162	190	.4	3.9	--	686	357	295		1060	7.9		--	--
May 28.......	1390			.87	1.5						--	--	--	--	--	--	.12	--	--	--		--	--		4	8
May 29.......	1260			--	--						102	0	219	550	1.0	11	--	1730	652	568		2210	8.1		--	--
May 1-31.....	1303			-	--						100	0	215	330	.9	8.5	--	1090	486	404		1570	8.0		--	--
June 5.......	1270			--	--						108	0	197	1000	.4	9.0	--	2400	954	865		3460	7.9		--	--
June 8.......	709			--	--						112	0	191	280	.8	6.9	--	926	470	378		1460	7.9		--	--
June 30......	360			.02	.02						--	--	--	--	--	--	.31	--	--	--		--	--		3	4
June 1-30....	602			--	--						94	0	227	610	.7	6.1	--	1560	708	631		2400	7.7		--	--
July 14......	382			--	--						67	0	242	500	.9	7.3	--	1360	656	601		2130	7.7		--	--
July 16......	304			--	--						46	0	244	1170	.8	3.9	--	2280	1120	1080		3790	7.5		--	--
July 29......	345			.25	.03						--	--	--	--	--	--	.13	--	--	--		--	--		2	4
July 1-31....	370			--	--						80	0	228	780	.8	5.4	--	1900	772	706		2940	7.5		--	--
Aug. 9.......	650			--	--						78	0	264	600	1.2	14	--	1560	668	604		2400	7.7		--	--
Aug. 25......	250			--	--						66	0	240	1100	1.8	--	--	2330	988	934		3720	7.3		--	--
Aug. 27......	840			.06	.00						--	--	--	--	--	--	.22	--	--	--		--	--		2	4
Aug. 1-31....	439			--	--						72	0	239	840	1.7	12	--	1870	796	737		3150	7.4		--	--
Sept. 3......	3260			--	--						44	0	166	160	.4	8.0	--	584	300	264		945	7.5		--	--
Sept. 28.....	519			--	--						98	0	232	740	1.3	12	--	1830	836	755		2910	7.5		--	--
Sept. 1-30...	1095			--	--						86	0	213	420	.8	12	--	1200	552	481		1890	7.4		--	--

MUSKINGUM RIVER BASIN--Continued

3-1290. TUSCARAWAS RIVER AT NEWCOMERSTOWN, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor[a]
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 29, 1964	8.5	80		0.3				10	0
Nov. 23	9.7	72		.3				30	M-4
Dec. 17	9.6	71		.1				15	0
Jan. 20, 1965	9.4	65		.2				20	Mm-8
Feb. 23	11.0	76		.1				30	M-1
Mar. 25	9.7	74		.1				130	M-4
Apr. 22	6.9	66		.2				30	M-8
May 28	10.8	126		.2				65	0
June 30	12.0	140		.3				--	M-2
July 29	9.6	108		.2				--	0
Aug. 27	--	--		.2				--	0

a The dilution ratio at which odor is just detectable; M-musty, Mm-moldy.

MUSKINGUM RIVER BASIN--Continued

3-1290. TUSCARAWAS RIVER AT NEWCOMERSTOWN, OHIO--Continued

Specific conductance and chloride, in parts per million, water year October 1964 to September 1965

Day	October		November		December		January	
	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)
1	3760	1050	2220	520	1480	295	1220	240
2	3920	1100	1910	420	1370	255	1240	235
3	4510	1290	2110	500	1380	270	1450	305
4	3920	1050	2350	570	1460	295	910	135
5	3510	970	2290	540	1070	170	831	125
6	3690	980	2340	580	1240	240	908	150
7	3380	880	2120	480	1280	250	1190	230
8	3320	860	2070	480	1360	270	1100	195
9	3200	800	2100	500	1010	150	984	165
10	3320	840	2210	520	974	140	981	170
11	3290	840	2770	690	1090	180	948	162
12	3540	940	3480	940	1020	165	870	138
13	3410	880	3580	960	844	130	862	132
14	3230	820	3480	920	1100	225	1060	185
15	3410	890	3420	900	792	118	914	150
16	3440	900	3450	920	862	134	986	162
17	3690	1000	3510	940	1160	220	1110	192
18	3840	1040	3620	960	984	155	1110	190
19	3840	1040	3320	880	1110	185	1270	235
20	3800	1020	3290	860	1130	195	1380	265
21	3840	1020	3260	840	1100	175	1460	290
22	4060	1120	3020	760	1510	300	1430	275
23	4340	1220	3180	810	2250	550	1540	315
24	3020	800	2930	720	1640	345	1180	220
25	2970	800	2800	680	1250	238	645	75
26	2830	760	2860	720	1240	240	720	110
27	2970	790	1980	420	1090	195	912	170
28	2990	800	1720	340	732	100	1040	210
29	2420	600	1480	300	887	145	858	145
30	2680	680	1590	340	932	150	903	158
31	2160	500	--	--	--	220	992	172

Day	February		March		April		May	
1	1120	205	690	102	1070	205	1060	180
2	1200	230	815	130	912	145	1100	190
3	1400	275	930	165	971	160	1080	175
4	1610	325	1060	195	1020	175	1160	205
5	1860	415	1070	200	1190	230	1200	215
6	1640	338	1160	225	1160	215	1220	225
7	1660	345	1380	305	1300	252	1280	235
8	1290	245	1440	320	1520	325	1330	255
9	1100	220	1240	258	1480	315	1620	355
10	835	145	1170	228	1090	190	1380	250
11	919	170	1360	290	1280	270	1120	182
12	865	150	1800	375	1230	245	1320	230
13	934	170	1520	340	986	172	1470	290
14	1380	320	1490	325	997	185	1630	330
15	1770	430	1380	280	938	155	1790	385
16	1970	485	1330	265	1100	205	1480	282
17	1230	225	1380	280	968	160	1520	300
18	1290	250	1230	230	1200	230	1530	295
19	1390	275	958	150	3160	900	1690	355
20	1480	310	1330	280	1500	315	1690	345
21	1340	265	1200	225	1520	325	1740	370
22	1400	285	1290	260	1510	320	1880	420
23	1440	282	1170	212	1300	245	1990	440
24	1400	270	1050	182	1330	280	1760	380
25	915	150	1090	225	1160	200	1990	440
26	742	122	763	115	1270	245	2040	470
27	651	108	926	185	997	165	1860	420
28	984	205	923	155	1140	210	1920	420
29	--	--	973	170	1030	175	2210	540
30	--	--	940	160	1020	165	2190	540
31	--	--	1090	215	--	--	1750	380

MUSKINGUM RIVER BASIN--Continued

3-1290. TUSCARAWAS RIVER AT NEWCOMERSTOWN, OHIO--Continued

Specific conductance and chloride, in parts per million, water year October 1964 to September 1965--Continued

Day	June		July		August		September	
	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)
1	2100	500	2890	800	3050	850	1980	500
2	2030	470	2720	740	3130	860	1140	170
3	1870	420	2940	780	3480	980	945	160
4	2100	480	2380	800	3100	860	1080	210
5	3460	1000	2350	580	3290	920	1350	280
6	3110	860	2410	620	3320	940	1470	310
7	2030	470	2480	650	2840	750	1400	290
8	1460	280	2530	680	2740	720	1560	320
9	3030	880	2720	740	2400	600	1660	340
10	2130	500	2910	800	2820	740	1790	380
11	1980	440	3060	880	3260	930	2120	480
12	1990	480	3190	920	2510	640	2030	470
13	1990	480	2640	690	2700	740	2070	480
14	2100	520	2130	500	2620	700	1650	330
15	2320	580	2820	800	2600	680	1430	290
16	2200	530	3790	1170	2530	680	1700	370
17	2100	540	2890	800	3150	900	2160	510
18	2310	560	2940	840	3480	1020	1570	300
19	2310	570	2910	840	3070	860	1570	320
20	2550	650	2760	750	2880	760	1900	410
21	3080	860	2330	580	3210	920	2230	520
22	2600	680	2320	590	3210	920	2140	480
23	2450	620	3110	900	3510	1000	2200	500
24	2550	660	3160	900	3440	1000	2210	520
25	2660	700	3370	980	3720	1100	2410	580
26	2800	730	3110	860	3650	1060	2440	600
27	2910	760	3140	860	3580	1040	2470	600
28	2740	700	2490	660	2760	720	2910	740
29	2720	740	2680	740	2660	720	2810	740
30	2720	740	2780	760	2600	680	2830	720
31	--	--	3190	930	2450	650	--	--

MUSKINGUM RIVER BASIN--Continued

3-1290. TUSCARAWAS RIVER AT NEWCOMERSTOWN, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at 1800)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	65	66	65	62	59	58	55	57	53	52	52	52	54	56	57	59	60	59	56	51	51	50	49	49	50	52	54	55	55	54	52	55
November	52	53	54	55	49	49	52	50	50	52	52	52	54	53	52	54	52	50	48	45	39	42	36	37	40	--	45	46	44	38	--	48
December	32	35	37	38	38	38	35	35	38	37	38	41	41	--	36	32	36	33	33	33	34	35	38	45	45	44	42	39	39	42	40	38
January	38	40	40	37	37	38	--	43	41	42	38	33	35	32	32	32	32	32	32	32	32	34	34	39	35	36	33	32	32	32	32	35
February	32	32	32	32	32	34	35	35	35	40	42	46	--	38	37	38	39	39	36	35	36	32	32	34	32	32	34	--	--	--	--	35
March	38	40	41	43	40	43	40	40	40	39	37	39	--	--	40	41	40	42	40	40	36	39	38	39	38	37	39	42	44	45	44	40
April	44	43	45	47	49	50	55	57	57	56	57	50	57	53	50	48	50	50	53	55	55	59	57	53	53	53	51	52	54	58	--	52
May	60	61	67	69	68	--	70	70	74	73	72	70	70	70	70	70	70	71	72	70	68	70	73	74	75	77	76	74	68	68	70	70
June	71	70	71	71	73	75	75	75	75	77	78	78	76	76	72	71	70	72	73	75	75	78	77	78	76	75	79	80	80	79	--	75
July	79	79	78	78	78	80	79	81	79	77	79	80	81	82	84	83	79	78	78	78	79	79	82	82	81	80	79	79	77	77	75	79
August	74	72	72	68	75	78	76	75	77	72	75	77	78	80	--	86	82	84	81	80	78	78	80	79	74	77	76	70	71	70	69	76
September	68	68	69	70	69	70	74	74	76	77	72	70	70	71	70	69	73	76	76	76	77	77	73	68	63	64	64	64	66	--	--	71

MUSKINGUM RIVER BASIN--Continued

3-1390. KILLBUCK CREEK AT KILLBUCK, OHIO

LOCATION.--At gaging station at bridge on U.S. Highway 62 at Killbuck, Holmes County, 0.1 mile downstream from Black Creek.
DRAINAGE AREA.--466 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1958.
Water temperatures: October 1962 to September 1965.
Sediment records: October 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 80°F Aug. 16; minimum, 33°F on several days during December to February.
Sediment concentrations: Maximum daily, 808 ppm Feb. 12; minimum daily, 2 ppm Dec. 2.
Sediment loads: Maximum daily, 3,360 tons Feb. 12; minimum daily, 0.3 ton Dec. 2.
EXTREMES, 1962-65.--Water temperatures: Maximum, 80°F July 27, 1964, Aug. 16, 1965; minimum, freezing point on several days during December 1962 to March 1963, December 1963, and January 1964.
Sediment concentrations: Maximum daily, 2,170 ppm June 11, 1963; minimum daily, 1 ppm Dec. 14, 15, 17, 1962, Jan. 15, 1964.
Sediment loads: Maximum daily, 7,790 tons Mar. 10, 1964; minimum daily, 0.1 ton Jan. 15, 1964.
REMARKS.--Flow affected by ice Dec. 18-21, Jan. 15-21, 28-31, Feb. 1-8, 21-24.

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 1230 and 1730)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	63	67	62	57	55	52	54	--	52	48	48	50	55	55	58	57	58	57	54	50	50	50	49	49	51	55	53	56	54	53	54	54
November	53	53	55	54	57	51	50	50	50	52	55	55	52	50	52	55	53	48	45	43	39	35	38	38	42	44	45	47	41	39	--	48
December	35	37	35	39	38	36	34	38	36	33	34	44	41	38	35	34	33	33	33	33	--	34	37	43	--	46	41	41	41	43	41	37
January	40	43	39	36	35	38	38	41	43	40	38	35	38	33	33	33	33	33	33	35	34	35	35	35	37	41	41	36	33	34	37	37
February	38	35	34	37	37	39	40	37	37	47	43	46	46	44	39	40	43	41	36	35	38	33	35	40	36	37	39	40	--	--	--	39
March	40	42	45	42	41	40	42	41	42	40	40	39	39	39	40	40	42	42	41	40	--	40	40	41	40	41	42	44	43	43	45	41
April	45	43	47	48	55	55	56	56	--	54	56	55	52	53	51	--	50	49	51	51	55	60	56	52	52	51	50	52	56	60	--	53
May	67	67	68	70	68	68	70	73	73	72	69	66	65	67	67	69	65	65	67	67	66	67	69	69	70	73	70	66	66	61	65	68
June	68	66	68	66	68	70	70	70	72	72	71	74	70	68	68	68	68	67	71	72	72	72	74	70	70	72	73	--	79	75	--	70
July	73	72	73	70	73	73	72	76	72	73	74	73	76	76	75	76	74	75	70	70	71	75	69	76	73	68	74	72	70	71	70	73
August	70	--	--	65	71	74	76	71	72	68	68	67	70	73	--	80	78	78	75	70	70	71	71	70	63	72	70	66	65	65	64	70
September	65	64	67	70	69	--	--	70	--	68	--	68	--	68	70	67	65	72	75	--	75	--	70	65	62	62	62	61	61	62	--	--

MUSKINGUM RIVER BASIN--Continued

3-1390. KILLBUCK CREEK AT KILLBUCK, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	37	70	7.0	49	20	2.6	58	4	0.6
2..	37	68	6.8	46	21	2.6	52	2	.3
3..	42	45	5.1	44	31	3.7	56	4	.6
4..	43	28	3.2	44	41	4.9	97	6	1.6
5..	39	22	2.3	43	42	4.9	182	15	7.4
6..	37	18	1.8	43	30	3.5	154	11	4.6
7..	37	17	1.7	43	15	1.7	123	8	2.6
8..	35	23	2.2	43	20	2.3	99	7	1.9
9..	36	28	2.7	42	32	3.6	89	3	.7
10..	36	19	1.8	43	26	3.0	81	3	.6
11..	35	10	.9	43	30	3.5	104	10	2.8
12..	34	10	.9	43	36	4.2	315	39	33
13..	34	20	1.8	43	36	4.2	283	25	19
14..	34	26	2.4	42	19	2.2	235	8	5.1
15..	33	22	2.0	41	10	1.1	183	4	2.0
16..	33	18	1.6	49	26	3.4	149	4	1.6
17..	35	20	1.9	56	41	6.2	130	9	3.2
18..	35	20	1.9	51	23	3.2	110	9	2.7
19..	38	20	2.0	51	16	2.2	100	10	2.7
20..	37	13	1.3	60	11	1.8	95	10	2.6
21..	38	12	1.2	58	7	1.1	90	8	1.9
22..	39	18	1.9	50	7	.9	85	9	2.1
23..	38	13	1.3	46	5	.6	83	11	2.5
24..	37	8	.8	45	5	.6	97	20	5.2
25..	38	9	.9	50	5	.7	263	150	110
26..	38	17	1.7	63	6	1.0	417	80	90
27..	39	25	2.6	65	7	1.2	385	34	35
28..	41	30	3.3	61	11	1.8	287	18	14
29..	58	51	8.0	64	7	1.2	230	12	7.4
30..	85	73	17	61	4	.6	198	16	8.6
31..	58	40	6.3	---	---	---	179	13	6.3
Total	1236	---	96.3	1482	---	74.5	5009	---	378.6

Day	JANUARY			FEBRUARY			MARCH		
1..	161	12	5.2	370	17	17	840	85	193
2..	251	40	A 25	300	15	12	819	94	208
3..	438	70	A 85	250	19	13	790	101	215
4..	394	28	30	200	24	13	289	109	85
5..	358	29	28	220	22	13	1080	108	315
6..	303	27	22	220	14	8.3	1120	98	296
7..	262	18	13	350	20	S 23	1170	92	291
8..	289	39	30	500	158	213	1170	102	322
9..	334	26	23	776	114	239	1120	101	305
10..	359	22	21	1140	280	862	1040	70	196
11..	326	13	11	1130	199	607	908	52	127
12..	287	9	7.0	1540	808	3360	782	44	93
13..	257	11	7.6	1530	219	905	677	42	77
14..	205	12	6.6	1360	133	488	601	42	68
15..	180	10	4.9	1270	81	278	545	37	54
16..	160	11	4.8	920	60	149	497	36	48
17..	150	11	4.4	692	69	129	475	51	65
18..	140	7	2.6	565	53	81	521	50	70
19..	140	7	2.6	493	84	112	468	35	44
20..	140	7	2.6	408	103	113	414	26	29
21..	140	10	3.8	350	41	39	361	17	16
22..	154	8	3.3	310	40	33	338	20	18
23..	399	34	S 58	290	35	27	501	160	220
24..	1230	261	867	310	40	S 37	962	230	600
25..	1310	210	743	1070	581	1680	826	30	67
26..	1270	196	672	1140	82	252	695	32	60
27..	1350	126	459	898	100	242	600	35	57
28..	1000	43	116	821	91	202	536	41	59
29..	800	26	56	---	---	---	656	128	227
30..	600	27	44	---	---	---	730	163	321
31..	480	19	25	---	---	---	711	114	219
Total	13867	---	3383.4	19423	---	10147.3	22242	---	4965

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

MUSKINGUM RIVER BASIN--Continued

3-1390. KILLBUCK CREEK AT KILLBUCK, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965--Continued

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	675	86	157	391	49	52	114	81	25
2..	656	75	133	362	39	38	135	110	40
3..	588	63	100	334	46	41	276	230	171
4..	531	58	83	312	50	42	278	263	197
5..	483	65	85	287	49	38	186	163	82
6..	482	93	121	252	40	27	143	90	35
7..	500	98	132	286	50	39	126	92	31
8..	489	118	156	361	74	72	116	116	36
9..	842	400	909	287	109	84	126	115	39
10..	794	90	193	230	95	59	117	102	32
11..	708	78	149	210	96	54	110	99	29
12..	809	382	834	195	77	40	94	71	18
13..	705	95	181	184	64	32	84	58	13
14..	586	62	98	169	77	35	77	60	12
15..	543	40	59	157	51	22	75	50	10
16..	540	43	63	153	32	13	74	53	10
17..	489	43	57	154	56	23	73	66	13
18..	463	42	52	152	67	27	70	57	11
19..	445	52	62	148	74	30	68	45	8.3
20..	409	53	58	135	84	31	65	46	8.1
21..	384	51	53	125	91	31	62	50	8.4
22..	367	54	54	141	77	29	63	47	8.0
23..	390	65	68	205	160	88	68	71	13
24..	464	64	80	154	138	57	75	73	15
25..	533	34	49	153	142	59	64	62	11
26..	656	59	104	180	107	52	59	51	8.1
27..	642	68	118	245	183	121	56	45	6.8
28..	560	56	85	245	182	120	54	45	6.6
29..	485	54	71	173	139	65	58	63	9.9
30..	428	50	58	140	101	38	61	57	9.4
31..	--	--	--	125	75	25	--	--	--
Total	16646	--	4422	6645	--	1484	3027	--	916.6

Day	JULY			AUGUST			SEPTEMBER		
1..	58	61	9.6	41	150	17	196	314	166
2..	54	51	7.4	48	151	20	183	160	79
3..	55	43	6.4	51	134	18	116	163	51
4..	53	48	6.9	46	121	15	84	133	30
5..	51	39	5.4	48	108	14	81	114	25
6..	49	38	5.0	47	114	14	115	149	46
7..	47	42	5.3	105	141	40	99	153	41
8..	47	40	5.1	196	139	74	84	154	35
9..	52	48	6.7	150	145	59	74	136	27
10..	91	106	S 29	88	142	34	68	134	25
11..	79	58	12	67	136	25	62	118	20
12..	54	45	6.6	57	127	20	71	97	18
13..	50	43	5.8	50	104	14	85	93	21
14..	47	42	5.3	47	108	14	80	98	21
15..	46	47	5.8	44	136	16	98	117	31
16..	43	50	5.8	41	122	14	120	113	37
17..	41	39	4.3	43	103	12	88	86	20
18..	41	40	4.4	58	119	19	76	71	14
19..	39	49	5.2	50	137	18	72	95	18
20..	38	49	5.0	45	114	14	60	122	20
21..	38	43	4.4	40	133	14	54	71	10
22..	45	76	9.2	38	38	3.9	49	115	15
23..	158	475	203	37	52	5.2	51	134	18
24..	79	119	25	36	53	5.2	68	105	19
25..	59	91	14	39	60	6.3	60	59	9.6
26..	50	96	13	199	428	230	54	46	6.7
27..	45	61	7.4	215	421	244	48	73	9.5
28..	44	57	6.8	185	227	113	46	72	8.9
29..	42	99	11	98	240	64	44	52	6.2
30..	41	93	10	68	300	55	46	60	7.4
31..	40	112	12	81	144	S 34	--	--	--
Total	1676	--	462.8	2358	--	1245.6	2432	--	855.3

Total discharge for year (cfs-days).. 96043
Total load for year (tons).. 28431.4

S Computed by subdividing day.

MUSKINGUM RIVER BASIN--Continued

3-1390. KILLBUCK CREEK AT KILLBUCK, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Jan. 25, 1965.......	1430			1300	142		40	50	61	73	88	94	98	100				SBWC
July 23.............	1100			168	492		54	70	78	86	92	94	100					SBWC

MUSKINGUM RIVER BASIN--Continued

3-1423. SALT FORK AT MOUTH, NEAR CAMBRIDGE, OHIO

LOCATION.--At bridge on U.S. Highway 21, 0.3 mile upstream from mouth, and 4 miles north of Cambridge, Guernsey County.
DRAINAGE AREA.--160 square miles.
RECORDS AVAILABLE.--Chemical analyses: June 1959 to August 1965.
REMARKS.--Samples collected for iron and manganese were filtered clear when collected.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed: Filtered	Oxygen consumed: Unfiltered
Oct. 29, 1964		8.0		1.6	2.3	47	16	76	5.0		131	0	24	154	0.6	1.0	--	418	183	76		764	6.9	5		
Nov. 23......		7.7		.67	.17	55	18	20	4.2		148	0	94	28	.2	.4	--	312	211	90		505	7.4	5		
Dec. 23......		8.1		.84	.57	44	13	13	2.2		66	0	104	20	.2	1.3	--	251	164	110		396	7.3	5		
Jan. 20, 1965		7.0		.38	.30	36	11	11	1.1		66	0	79	15	.0	1.3	--	223	135	81		331	7.2	10		
Feb. 24......		8.5		.36	.26	37	11	11	1.3		64	0	80	17	.1	1.8	--	214	138	85		338	7.1	3		
Mar. 25......		6.5		.40	.09	25	6.2	8.8	1.6		37	0	57	14	.1	2.3	--	149	88	58		238	7.2	30		
Apr. 22......		6.1		.32	.01	33	9.2	6.6	1.4		62	0	66	11	.1	.8	0.22	169	121	70		287	7.3	10		
May 28.......		14		.25	.01	41	11	6.3	2.9		73	0	83	10	.2	2.2	.30	213	147	87		339	7.0	5		
June 30......		3.5		.05	.00	106	29	25	3.2		115	0	282	24	.0	.9	.35	567	384	290		797	7.2	5		
July 29......		7.6		.04	2.7	203	57	12	6.4		3	0	698	10	.3	1.7	.30	1070	742	739	0.1	1240	5.5	5		
Aug. 27......		11		.06	.23	140	44	27	6.4		78	0	452	32	.3	2.7	--	796	531	467		1050	6.7	4		

Date of collection	Dissolved oxygen: Parts per million	Dissolved oxygen: Percent saturation	Organics: Phenols as C_6H_5OH	Organics: Alkyl benzene sulfonate (ABS)	Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor
Oct. 29, 1964...........	3.4	32		0.1				10	0
Nov. 23..................	11.6	80		.1				10	0
Dec. 23..................	11.4	83		.0				7	0
Jan. 20, 1965...........	8.7	60		.0				7	0
Feb. 24..................	12.4	86		.0				6	0
Mar. 25..................	10.6	61		.0				65	0
Apr. 22..................	7.8	75		--				30	0
May 28...................	5.6	61		--				130	0
June 30..................	8.4	98		--				--	--
July 29..................	6.2	72		--				--	--
Aug. 27..................	--	--		--				--	--

MUSKINGUM RIVER BASIN--Continued

3-1445. MUSKINGUM RIVER AT DRESDEN, OHIO

LOCATION.--At gaging station at bridge on State Highway 208, 0.5 mile east of Dresden, Muskingum County, and 0.5 mile downstream from Wakatomika Creek.

DRAINAGE AREA.--5,982 square miles.

RECORDS AVAILABLE.--Water temperatures: October 1952 to September 1960; October 1961 to September 1963, unpublished; October 1963 to September 1965.

Sediment records: October 1952 to September 1965.

EXTREMES, 1964-65.--Water temperatures: Maximum, 87°F Aug. 17; minimum, freezing point on several days during January and February.

Sediment concentrations: Maximum daily, 437 ppm July 23; minimum daily, 6 ppm Aug. 17.

Sediment loads: Maximum daily, 20,500 tons Feb. 26; minimum daily, 11 tons Aug. 17.

EXTREMES, 1952-65.--Water temperatures (1964-65): Maximum, 87°F Aug. 17, 1965; minimum, freezing point on several days during January and February 1965.

Sediment concentrations: Maximum daily, 1,600 ppm Jan. 22, 1959; minimum daily, 1 ppm on several days during 1952, 1954, 1956, and 1960.

Sediment loads: Maximum daily, 160,000 tons Jan. 22, 1959, minimum daily, 3 tons on several days during 1952-54, 1956, and 1960.

REMARKS.--Flow is regulated by 14 flood-control reservoirs.

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 0645 and 1200)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	--	--	--	--	--	--	--	63	62	60	56	--	60	62	62	64	62	63	62	58	56	55	54	52	52	52	54	56	57	57	55	--
November	53	53	55	58	56	56	52	52	51	53	56	57	56	54	55	59	58	57	--	52	47	42	41	43	--	46	47	47	45	42	--	52
December	40	39	39	40	--	37	36	38	--	38	40	42	42	41	39	38	38	34	--	33	34	35	38	--	40	44	43	--	41	44	--	39
January	41	42	40	37	37	38	39	41	43	42	40	39	--	35	32	--	32	32	32	--	34	--	--	--	36	37	36	35	--	--	--	--
February	32	--	--	--	--	36	35	--	35	38	40	43	42	40	37	38	--	39	--	--	37	33	32	--	34	32	32	35	--	--	--	--
March	38	39	--	43	40	40	40	40	--	--	--	--	40	--	--	42	--	--	--	--	--	--	--	--	53	39	39	41	44	44	44	--
April	43	43	44	44	48	50	52	55	54	53	55	55	53	52	52	51	54	50	52	54	56	--	--	--	53	--	52	51	53	55	--	51
May	57	60	65	66	66	68	--	--	72	72	71	70	69	69	70	72	71	69	72	71	--	73	72	71	73	75	75	73	69	67	67	69
June	69	70	69	67	68	72	72	74	73	75	75	77	75	73	72	71	71	69	70	72	73	75	77	77	75	76	77	77	80	80	--	73
July	78	78	79	79	78	78	81	80	82	80	79	77	79	82	83	82	83	82	79	78	77	78	79	81	82	80	82	80	78	78	77	80
August	79	76	75	75	73	78	80	--	78	77	75	76	76	81	82	83	87	85	85	80	79	80	78	77	78	78	79	77	71	69	72	78
September	72	--	67	69	71	71	72	75	76	77	76	73	71	71	71	70	72	74	75	76	79	78	77	73	68	66	68	--	69	70	--	72

MUSKINGUM RIVER BASIN--Continued

3-1445. MUSKINGUM RIVER AT DRESDEN, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	670	22	40	1140	17	52	1890	21	107
2..	697	22	41	1020	20	55	1830	21	104
3..	724	22	43	960	17	44	1840	18	89
4..	733	22	44	930	13	33	2150	27	157
5..	742	22	44	910	15	37	3440	99	920
6..	724	22	43	900	14	34	4610	139	1730
7..	688	22	41	930	17	43	4390	86	1020
8..	679	22	40	890	14	34	3510	44	417
9..	670	21	38	850	12	28	3120	34	286
10..	662	20	36	832	12	27	3040	30	246
11..	662	20	36	823	13	29	3230	31	270
12..	662	18	32	760	11	23	5220	95	S 1450
13..	646	20	35	742	12	24	8210	252	5590
14..	638	17	29	679	13	24	8600	181	4200
15..	638	18	31	670	16	29	7660	117	2420
16..	638	20	34	697	15	28	6500	71	1250
17..	630	17	29	742	13	26	5240	42	594
18..	630	17	29	805	15	33	4360	32	377
19..	630	16	27	805	21	46	3750	21	213
20..	630	16	27	870	21	49	3320	15	134
21..	638	15	26	900	19	46	3080	11	91
22..	733	11	22	930	17	43	2800	11	83
23..	787	9	19	880	14	33	2480	11	74
24..	805	9	20	814	11	24	2080	14	79
25..	814	9	20	805	14	30	2560	30	S 232
26..	823	8	18	860	17	39	5720	152	S 2510
27..	823	9	20	1230	25	83	9660	244	6360
28..	832	9	20	1840	42	209	9680	187	4890
29..	930	10	25	1950	36	190	7910	113	2410
30..	990	11	29	1950	30	158	6500	73	1280
31..	1140	14	43	--	--	--	5650	48	732
Total	22708	--	981	29114	--	1553	144030	--	40315

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	4720	37	472	7430	42	843	19600	129	6830
2..	4360	37	436	6270	50	846	18900	98	5000
3..	6480	74	1290	5250	45	638	17900	76	3670
4..	9860	150	3990	3850	33	343	16100	79	3430
5..	9150	147	3630	3300	19	169	15500	95	3980
6..	7490	73	1480	3970	22	236	16600	100	4480
7..	5930	38	608	4410	40	476	17000	84	3860
8..	5460	34	501	7580	128	2620	16600	68	3050
9..	5960	47	756	12400	154	5160	16000	66	2850
10..	7930	74	1580	18000	248	12100	15400	83	3450
11..	8950	88	2130	20200	182	9930	13500	55	2000
12..	8140	67	1470	21000	212	12000	11900	44	1410
13..	6790	44	807	21600	185	10800	11200	38	1150
14..	5850	35	553	20300	148	8100	9220	33	822
15..	5060	27	369	16700	100	4510	8250	31	691
16..	4200	33	374	12200	69	2270	7620	32	658
17..	3230	32	279	9790	59	1560	7210	32	623
18..	2620	17	120	8270	51	1140	7770	38	797
19..	2700	14	102	7270	49	962	9660	34	887
20..	2840	14	107	6520	42	739	9980	66	1780
21..	2930	9	71	5890	37	588	8860	66	1580
22..	2870	10	77	5420	32	468	7540	44	896
23..	3160	29	247	4690	28	355	7050	39	742
24..	9230	282	S 8430	4520	34	415	10400	124	3480
25..	19100	350	18000	10700	321	S 10900	15600	176	7410
26..	20800	265	14900	19400	392	20500	16600	149	6680
27..	26100	228	12900	20500	226	12500	15100	97	3950
28..	19500	128	6740	20200	168	9160	12800	65	2250
29..	16600	81	3630	--	--	--	11600	93	2910
30..	13000	67	2350	--	--	--	12900	184	6410
31..	9700	45	1180	--	--	--	14200	157	6020
Total	255610	--	89579	307630	--	130328	398560	--	93746

S Computed by subdividing day.

MUSKINGUM RIVER BASIN--Continued

3-1445. MUSKINGUM RIVER AT DRESDEN, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965--Continued

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	13300	71	2550	8560	45	1040	2580	41	286
2..	11800	67	2130	7370	42	836	2480	34	228
3..	10700	58	1680	6400	33	570	2500	32	216
4..	9450	61	1290	5620	33	501	2880	34	264
5..	8210	56	1240	5100	28	386	3160	36	307
6..	7580	53	1080	4720	27	344	2630	34	241
7..	7390	51	1020	4560	25	308	2230	33	199
8..	7560	50	1020	4720	30	382	2050	36	199
9..	10000	112	3020	4390	27	320	1990	40	215
10..	13900	152	5700	4040	28	305	1990	44	236
11..	13800	118	4400	3770	27	275	1950	38	200
12..	14100	173	6590	3460	28	262	1890	36	184
13..	15200	186	7630	3230	22	192	1680	32	145
14..	14000	158	5970	2940	21	167	1540	28	116
15..	12200	83	2730	2750	18	134	1430	24	93
16..	11400	63	1940	2540	13	89	1350	24	87
17..	10800	67	1950	2510	13	88	1280	25	86
18..	9750	52	1370	2450	15	99	1230	31	103
19..	8530	39	898	2340	16	101	1170	34	107
20..	7370	40	796	2270	15	92	1150	31	96
21..	6690	38	686	2130	15	86	1120	20	60
22..	6080	33	542	2010	22	119	1080	31	90
23..	5850	31	490	2050	53	293	1060	31	89
24..	6190	33	552	2090	25	141	1030	33	92
25..	7550	46	938	2170	25	146	1020	25	69
26..	11500	78	2420	2190	29	171	1050	25	71
27..	13700	95	3510	2570	32	222	1030	24	67
28..	13400	89	3220	3610	56	546	980	22	58
29..	12300	78	2590	4150	80	896	930	20	50
30..	10300	66	1840	3540	43	411	930	20	50
31..	--	--	--	2940	41	325	--	--	--
Total	310600	--	71792	113190	--	9847	49390	--	4304

Day	JULY			AUGUST			SEPTEMBER		
1..	980	26	69	751	11	22	1770	34	162
2..	920	24	60	760	14	29	4520	70	854
3..	900	16	39	769	13	27	5400	117	1710
4..	870	18	42	769	14	29	3910	72	760
5..	870	17	40	796	13	28	2640	71	506
6..	841	25	57	778	18	38	2090	26	147
7..	850	28	64	778	18	38	1870	21	106
8..	832	19	43	950	19	49	1680	25	113
9..	850	15	34	1220	24	79	1500	39	158
10..	1080	23	67	1250	24	81	1350	17	62
11..	1240	30	100	1190	15	48	1230	16	53
12..	1340	30	109	1000	14	38	1520	32	131
13..	1130	20	61	870	13	31	2440	55	362
14..	1000	16	43	787	13	28	3170	63	539
15..	920	11	27	733	17	34	4010	61	660
16..	860	16	37	688	10	19	3480	57	536
17..	832	19	43	670	6	11	2700	41	299
18..	805	12	26	760	10	21	2130	35	201
19..	805	12	26	841	14	32	1790	33	159
20..	778	11	23	805	15	33	1580	30	128
21..	778	9	19	733	19	38	1500	23	93
22..	780	14	29	697	17	32	1370	21	78
23..	980	437	S 1390	662	12	21	1270	15	51
24..	890	43	103	638	11	19	1230	14	46
25..	910	35	86	654	13	23	1230	21	70
26..	980	27	71	688	12	22	1190	19	61
27..	980	24	64	1090	31	S 125	1130	15	46
28..	890	16	38	1600	39	168	1070	13	36
29..	814	18	40	1620	31	136	1000	18	49
30..	769	19	39	1260	24	82	990	18	48
31..	724	15	29	1070	19	55	--	--	--
Total	28198	--	2918	27877	--	1436	62760	--	8224

Total discharge for year (cfs-days).. 1749667
Total load for year (tons).. 455023

S Computed by subdividing day.

MUSKINGUM RIVER BASIN--Continued

3-1445. MUSKINGUM RIVER AT DRESDEN, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Jan. 25, 1965.......	1710			20200	320		40	52	65	75	85	90	92	94	98	100		SBWC
July 23.............	0800			1220	1740		42	61	78	92	99	99	100					SBWC
July 23.............	0800			1220	1740		31	48	70	95	98	99	100					SBN

MUSKINGUM RIVER BASIN--Continued

3-1465. LICKING RIVER NEAR NEWARK, OHIO

LOCATION.--Temperature recorder at gaging station on right bank at downstream side of Stadden Bridge, 1 mile downstream from Shawnee Run, 1.5 miles upstream from Equality Run, and 3.5 miles east of Newark, Licking County
DRAINAGE AREA.--536 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 84°F Aug. 16, 17; minimum, freezing point on many days during December to February.
EXTREMES, 1962-65.--Water temperatures: Maximum, 84°F Aug. 16, 17, 1965; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	64	65	65	63	60	58	57	57	58	55	53	54	56	57	58	58	59	59	58	54	53	53	52	51	52	54	55	57	57	56	54	57
Minimum	58	63	59	60	57	54	54	54	55	52	50	50	53	54	54	56	56	56	54	52	52	51	51	48	50	51	53	55	56	54	51	54
November																																
Maximum	53	56	56	54	54	54	50	50	51	52	52	54	54	53	52	56	56	52	51	50	46	39	40	41	45	45	46	47	—	—	—	50
Minimum	51	52	50	51	52	48	48	50	48	48	51	52	53	50	48	52	52	50	50	46	39	37	37	40	41	45	45	46	—	—	—	48
December																																
Maximum	38	39	40	40	40	37	37	38	38	39	42	42	41	39	36	34	37	37	34	36	38	38	42	46	47	43	41	39	39	42	41	39
Minimum	37	38	38	40	37	36	36	37	38	37	39	41	39	36	32	33	34	33	33	34	36	38	38	42	43	41	39	38	38	39	39	37
January																																
Maximum	39	41	39	36	36	37	38	43	43	40	37	36	36	34	32	32	32	32	32	34	36	38	38	34	35	36	36	33	32	32	32	36
Minimum	38	38	36	34	34	35	36	38	40	36	34	34	34	32	32	32	32	32	32	32	32	33	32	32	34	34	33	32	32	32	32	34
February																																
Maximum	32	33	32	32	34	38	36	34	36	41	41	41	41	37	37	38	39	39	39	35	36	35	34	34	35	32	35	38	—	—	—	36
Minimum	32	32	32	32	32	34	33	33	34	36	41	41	37	35	34	35	36	37	35	33	35	32	32	32	32	32	32	34	—	—	—	34
March																																
Maximum	40	40	42	42	41	37	38	38	38	39	38	39	40	40	40	44	43	42	41	38	37	42	42	40	38	38	42	45	46	46	46	41
Minimum	37	39	40	41	37	35	37	38	38	38	38	37	36	38	38	38	40	40	37	36	35	35	40	37	37	38	36	38	45	43	40	38
April																																
Maximum	45	45	45	48	49	50	53	53	52	51	52	52	52	51	51	50	51	50	54	55	55	57	57	56	50	50	50	52	55	58	—	52
Minimum	40	42	39	42	46	48	50	51	50	48	50	52	49	48	50	48	45	47	47	48	51	53	52	50	49	49	50	48	50	51	—	48
May																																
Maximum	62	64	65	66	65	67	67	70	70	68	68	65	67	67	68	68	66	70	69	69	67	72	71	73	71	75	73	72	67	67	69	68
Minimum	55	57	58	59	60	60	62	62	64	64	62	61	58	58	59	62	63	60	63	62	60	63	65	65	67	67	69	65	60	59	60	62
June																																
Maximum	72	73	71	72	74	75	71	70	77	77	78	79	78	75	75	72	73	73	76	78	78	77	78	77	76	77	79	80	81	81	—	76
Minimum	62	66	64	62	64	69	67	66	67	69	69	70	67	65	66	66	65	64	66	67	70	70	71	70	66	67	69	73	74	74	—	68
July																																
Maximum	78	77	78	79	79	80	80	80	80	76	78	78	80	80	80	78	78	76	76	74	74	74	77	80	80	78	77	76	76	72	72	77
Minimum	68	68	70	70	70	71	74	73	73	72	70	69	70	73	74	70	72	70	69	66	66	68	71	73	74	70	71	70	67	66	66	70
August																																
Maximum	71	70	73	73	76	79	79	77	80	79	78	78	79	81	83	84	84	83	82	80	78	78	78	78	—	—	—	78	75	74	74	78
Minimum	68	66	65	68	67	74	76	74	74	73	70	71	73	76	77	79	80	78	78	74	72	74	75	73	—	—	—	75	69	71	71	73
September																																
Maximum	73	75	75	77	77	74	76	77	75	74	74	66	67	69	68	66	71	73	76	76	75	75	70	65	64	64	64	65	66	64	—	71
Minimum	72	68	69	72	73	72	72	75	70	71	66	65	66	66	64	64	64	67	68	69	70	70	65	59	58	58	59	58	61	62	—	66

MUSKINGUM RIVER BASIN--Continued

3-1475. LICKING RIVER BELOW DILLON DAM, NEAR DILLON FALLS, OHIO

LOCATION.--Temperature recorder at gaging station on left bank, 500 feet downstream from Dillon Dam, 2 miles northwest of Dillon Falls, Muskingum County, and 5.8 miles upstream from mouth.
DRAINAGE AREA.--748 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1961 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 75°F July 23, 24, Aug. 4-6, 28, 29; minimum, 33°F Feb. 27 to Mar. 1.
EXTREMES, 1961-65.--Water temperatures: Maximum, 78°F July 23-27, 1962, Aug. 4-9, 1964; minimum, 33°F Feb. 27 to Mar. 1, 1965.

Temperatures (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	65	65	64	63	63	61	60	59	58	58	57	56	55	55	54	54	54	55	55	55	55	55	55	55	54	53	53	52	52	52	52	57
Minimum	65	64	63	63	61	60	59	58	58	57	56	55	55	54	54	54	54	54	55	54	54	55	55	54	53	53	52	52	52	52	52	56
November																																
Maximum	52	52	52	52	52	52	52	52	52	52	52	51	51	51	50	50	50	50	49	49	48	46	44	44	43	43	43	42	42	42	—	49
Minimum	52	52	52	52	52	52	52	52	52	52	51	51	51	50	50	50	50	49	49	48	46	44	44	43	43	43	42	42	42	41	—	48
December																																
Maximum	41	40	39	39	39	38	37	37	37	37	37	37	37	38	37	37	37	36	37	37	37	36	36	36	36	36	36	36	37	39	39	37
Minimum	40	39	39	39	38	37	37	37	37	37	37	37	37	37	37	37	36	36	36	37	36	36	36	36	36	36	36	36	36	37	39	37
January																																
Maximum	39	39	39	38	38	38	38	38	38	38	39	39	39	38	37	37	36	35	35	35	35	36	36	36	36	35	36	36	36	36	36	37
Minimum	39	39	38	38	38	38	38	38	38	38	38	39	38	37	37	36	35	35	35	35	35	35	36	36	35	35	35	36	36	36	36	37
February																																
Maximum	36	36	36	36	36	36	36	35	35	34	41	42	42	42	41	40	39	38	38	37	37	37	35	35	35	35	34	33	—	—	—	37
Minimum	36	36	36	36	36	36	35	35	34	34	34	41	42	41	40	39	38	38	37	37	37	35	35	35	35	34	33	33	—	—	—	36
March																																
Maximum	34	36	39	40	41	41	41	40	39	39	39	38	38	38	38	38	38	39	39	39	39	39	39	39	39	39	39	39	40	41	43	39
Minimum	33	34	36	39	40	41	40	39	39	39	38	38	38	38	38	38	38	38	39	39	38	38	39	39	39	39	38	39	39	40	41	38
April																																
Maximum	44	44	44	44	43	43	48	50	52	52	50	50	50	51	51	50	50	50	52	52	52	52	54	54	54	54	52	51	51	52	—	50
Minimum	43	44	44	43	43	43	43	48	50	50	50	50	50	50	50	50	50	50	50	51	50	52	52	53	54	52	51	51	51	51	—	49
May																																
Maximum	56	57	59	59	60	60	62	63	63	64	64	65	66	66	67	68	69	69	69	69	69	69	69	69	70	70	71	71	71	70	70	66
Minimum	52	55	57	59	59	59	60	61	62	63	64	64	65	66	66	67	68	68	68	69	68	68	69	69	69	70	70	71	70	70	70	65
June																																
Maximum	70	70	69	69	69	69	69	70	70	71	71	70	70	70	70	70	70	71	71	71	71	71	71	70	70	70	70	70	70	70	—	70
Minimum	70	69	69	69	69	69	69	69	70	70	70	70	70	70	70	70	70	70	70	71	71	71	70	70	70	70	70	70	70	70	—	70
July																																
Maximum	71	71	72	72	72	72	72	72	72	73	74	74	73	73	73	73	73	74	74	74	74	74	75	75	74	73	73	73	74	73	73	73
Minimum	70	71	71	72	71	72	71	72	72	72	73	73	73	73	73	73	73	73	73	73	73	73	73	74	73	73	73	73	73	73	73	73
August																																
Maximum	73	74	73	75	75	75	74	73	73	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	75	75	74	74	74
Minimum	73	73	73	73	75	74	73	73	72	73	74	74	74	74	74	74	74	74	74	74	74	74	74	74	73	73	74	74	74	74	72	74
September																																
Maximum	72	72	72	70	69	68	68	70	70	70	70	70	69	69	69	69	70	70	70	71	71	71	71	70	70	70	69	68	67	66	—	70
Minimum	72	72	70	69	68	68	68	68	70	70	70	69	69	69	69	69	69	70	70	70	70	70	70	70	70	69	68	67	66	65	—	69

MUSKINGUM RIVER BASIN--Continued

3-1492. MUSKINGUM RIVER AT PHILO, OHIO

LOCATION.--Along right bank of Muskingum River, about 1,000 feet below Philo Dam, on canal which supplies river water from above the dam to Ohio Power Company's Philo Generating Division at Philo, Muskingum County.

RECORDS AVAILABLE.--Chemical analyses: April to September 1965.
Water temperatures: April to September 1965.

EXTREMES, April to September 1965.--Specific conductance: Maximum daily, 1,940 micromhos Aug. 1; minimum daily, 170 micromhos Apr. 28.
Dissolved oxygen: Maximum daily, 13.4 ppm July 13, 22; minimum daily, 3.4 ppm June 30.
Water temperatures: Maximum, 86°F Aug. 16, 17.

REMARKS.--The recorder is located in the basement of the generating plant.

Specific conductance, pH, dissolved oxygen, and temperatures, April to September 1965

Day	APRIL								MAY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	--	--	--	--	--	--	--	--	510	--	7.4	7.1	9.2	7.7	60	56
2..	--	--	--	--	--	--	--	--	--	--	7.4	7.1	9.3	7.6	62	58
3..	--	--	--	--	--	--	--	--	--	--	7.6	7.2	9.5	8.6	64	61
4..	--	--	--	--	--	--	--	--	--	--	7.7	7.3	9.7	7.5	66	62
5..	--	--	--	--	--	--	--	--	--	--	7.7	7.2	10.0	7.5	66	64
6..	660	580	--	6.7	7.3	6.9	51	50	--	--	7.7	7.2	10.3	7.5	68	64
7..	630	550	7.8	7.2	7.1	5.9	54	51	--	--	7.7	7.3	10.3	7.5	68	67
8..	550	520	8.0	7.8	7.4	5.9	54	52	--	--	7.7	7.4	10.6	7.6	69	68
9..	540	420	8.0	7.6	7.4	5.0	56	54	--	--	7.6	7.3	9.9	7.3	70	68
10..	490	440	7.8	7.7	7.2	5.8	56	54	--	--	7.7	7.4	10.2	7.3	71	70
11..	450	420	7.8	7.6	7.1	5.9	62	56	--	--	7.6	7.2	10.6	7.8	71	69
12..	440	380	7.7	7.3	6.2	3.8	66	57	--	--	7.6	7.4	10.3	8.1	70	67
13..	540	410	7.8	7.6	6.4	5.0	66	54	870	690	7.9	7.6	10.5	8.5	70	66
14..	510	420	7.6	7.5	6.9	5.1	61	52	--	--	8.0	7.4	10.9	8.7	69	67
15..	490	400	7.6	7.2	6.7	5.7	60	54	--	--	8.0	7.5	10.8	8.7	70	67
16..	500	460	7.4	7.0	6.4	5.2	57	54	--	--	7.9	7.7	10.5	8.7	70	69
17..	520	470	7.5	7.2	7.3	5.8	58	51	--	--	7.8	7.4	9.9	8.4	70	69
18..	580	500	7.7	7.3	7.5	5.1	58	52	--	--	7.8	7.3	9.6	8.5	71	68
19..	570	520	7.8	7.4	7.2	5.2	58	54	--	--	7.8	7.5	9.6	7.8	75	70
20..	680	560	7.8	7.4	6.6	5.1	63	56	--	--	7.9	7.4	9.6	7.9	74	69
21..	1160	660	7.8	7.6	7.1	4.8	64	56	--	--	7.9	7.4	9.9	8.1	74	70
22..	1160	650	7.9	7.4	7.0	4.9	64	56	--	--	7.9	6.9	10.5	7.6	74	71
23..	940	680	7.9	7.5	6.7	4.9	64	56	--	--	7.2	6.6	10.0	8.2	75	72
24..	760	630	8.1	7.6	6.6	4.9	64	56	--	--	7.1	6.3	11.2	8.2	77	74
25..	650	460	8.0	7.8	5.7	4.9	62	58	950	900	7.4	6.8	11.2	9.0	77	75
26..	680	360	8.0	7.1	9.3	4.8	63	54	1080	860	7.6	6.8	12.3	8.8	79	75
27..	410	190	7.4	7.0	9.5	8.7	54	52	1050	860	7.5	6.5	11.4	7.6	78	76
28..	450	170	7.4	7.0	9.6	7.9	52	51	1100	840	7.5	6.7	13.0	8.4	76	74
29..	420	200	7.5	7.2	9.3	7.9	56	51	1090	880	8.2	6.9	12.9	7.6	75	72
30..	500	240	7.4	7.1	9.2	7.9	57	54	1020	800	7.9	7.2	11.6	8.7	72	68
31..	--	--	--	--	--	--	--	--	900	800	8.0	7.2	12.4	9.1	70	67

MUSKINGUM RIVER BASIN--Continued

3-1492. MUSKINGUM RIVER AT PHILO, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, April to September 1965--Continued

Day	JUNE								JULY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	1100	920			12.6	10.2	72	69	1420	1340	--	--	5.1	3.8	81	78
2..	1080	960			11.6	8.4	72	70	1470	1420	--	--	7.2	4.0	80	78
3..	1060	830			10.9	8.4	72	70	--	--	--	--	--	--	--	--
4..	900	780			11.2	9.1	72	70	1500	1470	--	--	8.6	4.6	81	76
5..	970	830			12.0	9.3	75	70	1470	1340	--	--	8.6	4.6	80	78
6..	880	800			11.9	9.6	76	74	1380	1280	--	--	8.7	5.7	80	78
7..	1040	880			11.6	8.8	75	74	1330	1270	--	--	11.1	8.0	81	80
8..	1180	1040			11.4	9.7	76	74	1440	1330	--	--	12.4	6.9	82	78
9..	1320	1040			11.8	9.4	76	75	1480	1440	--	--	11.0	8.4	82	80
10..	1340	1210			11.4	8.4	76	74	1490	1410	--	--	9.8	7.0	81	78
11..	1240	940			11.4	8.5	78	75	1460	1410	--	--	9.9	7.2	81	80
12..	940	790			10.3	9.0	80	76	1410	1250	--	--	11.2	8.2	81	78
13..	1250	830			11.7	9.0	80	77	1290	1240	--	--	13.4	8.6	82	80
14..	1280	1040			11.4	9.4	78	76	1320	1260	--	--	10.6	8.4	82	80
15..	1090	970			11.5	8.7	77	75	1360	1270	--	--	12.2	8.1	82	81
16..	1050	970			11.2	8.7	75	73	1530	1360	--	--	11.7	8.2	84	82
17..	1050	980			11.2	7.9	75	72	1580	1460	--	--	11.0	9.8	82	81
18..	1080	1000			11.8	8.9	75	71	1640	1560	--	--	12.2	8.2	82	81
19..	1060	1020			12.7	9.0	75	71	1720	1640	7.6	7.3	12.8	8.1	82	80
20..	1090	1040			12.3	9.3	76	71	1750	1600	7.7	7.0	12.0	8.8	82	80
21..	1180	1060			11.2	9.3	76	74	1750	1440	7.7	7.1	11.2	9.4	80	78
22..	1150	1050			10.5	7.8	78	74	1540	1290	8.4	7.2	13.4	9.9	82	78
23..	1310	1050			9.0	7.0	78	75	1420	840	7.6	5.5	10.6	5.1	81	75
24..	--	--			9.5	5.8	78	76	1220	900	6.2	5.2	8.6	7.2	81	75
25..	1190	1120			9.0	5.6	78	76	1330	1190	6.4	6.1	8.8	6.2	82	80
26..	1200	1130			7.9	4.4	78	76	1260	1160	6.9	6.2	9.4	6.8	84	81
27..	1340	1180			9.4	4.7	78	76	1320	1200	6.8	6.3	9.3	6.4	82	74
28..	1370	1320			7.6	3.9	80	78	1280	1080	6.9	6.7	9.2	6.6	84	81
29..	--	--			--	--	--	--	1180	1080	6.9	6.6	9.0	6.7	83	80
30..	1340	1300			5.2	3.4	81	80	1450	1150	7.0	6.6	10.1	6.1	83	79
31..	--	--			--	--	--	--	1700	1340	7.0	6.8	9.7	7.0	81	78

Day	AUGUST								SEPTEMBER							
1..	1940	1660	7.2	7.0	10.6	8.1	81	78	1920	1100	7.4	6.6	8.8	5.7	75	70
2..	1920	1820	7.1	6.9	9.2	7.3	80	78	1260	1160	6.6	6.0	10.2	7.0	74	66
3..	1900	1620	7.1	6.9	9.7	7.5	79	76	1260	1110	7.7	5.5	10.2	7.5	73	70
4..	1770	1560	7.0	6.9	9.0	6.7	78	75	1140	860	7.6	7.3	10.3	8.3	72	70
5..	1560	1370	7.0	6.9	9.3	6.2	79	74	860	710	7.3	7.0	10.0	8.4	73	72
6..	1520	1390	7.4	6.9	10.6	6.7	81	75	800	700	7.2	6.6	9.2	8.4	74	72
7..	1520	1410	7.4	6.9	11.1	6.4	80	75	800	740	7.4	6.7	10.4	8.2	75	72
8..	1590	1510	7.1	6.9	9.7	6.9	80	78	870	780	7.5	6.8	10.9	8.1	76	73
9..	1650	1510	7.0	6.8	8.2	6.3	80	78	910	830	7.7	6.7	11.6	8.9	79	73
10..	1730	1520	7.0	6.8	7.7	5.3	80	78	1010	910	7.8	6.9	10.9	8.6	81	78
11..	1790	1600	7.2	6.9	9.3	3.9	78	76	1060	990	8.3	7.1	9.8	7.0	--	--
12..	1750	1620	7.5	7.2	11.6	6.7	79	76	--	--	8.3	6.3	8.2	6.3	--	--
13..	1740	1450	7.4	7.1	10.4	5.8	79	76	880	800	7.5	6.1	9.1	7.5	73	71
14..	1470	1350	7.5	7.2	10.8	7.8	81	78	950	850	7.5	7.3	9.4	7.0	75	73
15..	1480	1380	7.4	7.1	10.7	7.2	83	79	980	860	7.8	6.3	9.6	6.9	75	73
16..	1500	1420	7.3	7.0	10.6	6.9	86	81	990	950	7.3	6.0	9.4	7.0	79	76
17..	1540	1460	7.3	7.0	10.6	7.6	86	82	970	850	7.8	6.7	9.3	6.9	76	70
18..	--	--	--	--	--	--	--	--	870	780	7.9	7.4	8.7	6.4	75	73
19..	1610	1500	7.0	6.8	8.5	4.0	84	83	790	760	7.7	7.4	9.0	7.5	76	75
20..	1690	1480	7.2	6.9	9.2	4.0	84	82	890	780	7.8	7.4	9.8	7.5	78	76
21..	1530	1350	7.3	7.2	10.2	6.8	82	80	960	890	7.6	6.7	10.5	7.2	80	76
22..	1450	1320	7.7	7.1	11.6	6.5	83	82	1000	930	7.4	6.5	9.3	7.2	80	78
23..	1460	1300	7.5	7.2	10.8	8.2	83	81	960	880	7.4	7.1	8.7	6.0	79	77
24..	1470	1400	7.6	6.9	10.9	8.4	--	--	880	830	7.4	7.0	8.4	5.7	77	74
25..	1420	1300	7.4	7.2	9.9	5.6	82	79	930	880	7.2	6.5	9.0	6.0	76	72
26..	1600	1420	7.3	6.9	9.3	7.0	80	77	1040	920	7.1	6.4	10.3	7.0	--	--
27..	1670	1600	7.0	6.7	9.6	6.3	80	78	1120	1040	6.8	6.4	10.8	8.5	70	68
28..	1620	1530	7.0	6.6	8.4	5.9	80	76	1220	1090	6.6	6.4	11.2	7.5	70	67
29..	1570	1450	7.3	7.0	10.3	7.2	79	74	1220	1150	8.1	6.4	11.1	8.5	69	67
30..	1760	1570	8.0	7.3	12.1	7.5	77	73	1220	1150	8.1	7.7	10.2	7.9	69	67
31..	1930	1750	7.8	7.2	10.6	8.1	75	73	--	--	--	--	--	--	--	--

MUSKINGUM RIVER BASIN--Continued

3-1500. MUSKINGUM RIVER AT McCONNELSVILLE, OHIO

LOCATION (revised).--Temperature recorder at gaging station on left bank, just upstream from dam 7 at McConnelsville, Morgan County, and 3.5 miles downstream from Oilspring Run.
DRAINAGE AREA.--7,411 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951, October 1954 to September 1963.
Chloride and specific conductance: October 1960 to September 1963.
Water temperatures: October 1950 to September 1951, July 1954 to September 1963, June to September 1965.
EXTREMES, June to September 1965.--Water temperatures: Maximum, 90°F July 12, Aug. 17.
EXTREMES, 1950-51, 1954-63, 1965.--Water temperatures: Maximum, 94°F Aug. 4, 1955; minimum, freezing point on many days during winter months.

Temperature (°F) of water, June to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
June																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	77	77	75	78	78	79	80	80	80	80	81	83	82	82	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	77	75	75	75	76	75	72	76	77	78	79	79	80	80	--	--
July																																
Maximum	81	80	81	82	81	82	82	83	83	83	83	90	88	87	86	87	86	88	88	87	89	87	84	87	85	84	82	83	83	84	83	84
Minimum	79	79	79	79	79	79	81	80	82	82	82	82	85	86	85	85	85	86	86	85	84	84	83	83	83	82	82	82	82	82	82	82
August																																
Maximum	83	82	83	81	79	85	84	82	82	82	82	83	83	83	86	88	90	89	88	87	86	86	86	85	84	84	84	83	82	81	80	84
Minimum	82	82	81	79	82	80	81	82	81	81	80	79	80	81	82	84	86	86	86	85	84	84	85	84	83	83	82	81	81	80	78	82
September																																
Maximum	78	77	75	74	74	74	76	76	76	80	80	79	76	75	73	73	74	75	75	79	79	80	80	79	77	74	72	70	70	70	--	76
Minimum	77	75	73	73	74	74	74	78	80	78	79	76	75	73	73	73	73	74	75	75	77	78	79	77	74	72	70	70	70	70	--	75

MUSKINGUM RIVER BASIN--Continued

3-1503. MUSKINGUM RIVER NEAR BEVERLY, OHIO

LOCATION.--On right bank at intake line to Ohio River Valley Water Sanitation Commission (ORSANCO) monitor at Ohio Power Company water intake near Beverly, Washington County, 1 mile downstream from Meigs Creek, and 1.1 miles upstream from Olive Green Creek.
DRAINAGE AREA.--7,600 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1963 to September 1965.
Water temperatures: July 1963 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 2,070 micromhos Nov. 7; minimum daily, 437 micromhos Feb. 11.
Water temperatures: Maximum, 95°F Aug. 17; minimum, 34°F Feb. 5.
EXTREMES, 1963-65.--Specific conductance: Maximum daily, 2,070 micromhos Oct. 12 1963, Nov. 7, 1964; minimum daily, 265 micromhos Mar. 12, 1964.
Water temperatures: Maximum, 95°F Aug. 17, 1965; minimum, 33°F Jan. 13-16, 18, 1964.
REMARKS.--Daily samples were collected at this station and samples were selected for analysis on the followng basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, and (3) maximum daily specific conductance for each 10-day period. Records of discharge are given for Muskingum River at McConnelsville.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Detergent (MBAS)
Oct. 6, 1964.	715					--	--				--	--	--	420	--	--	0.10	--	--	--		1870	7.9	0.1
Oct. 12......	620					175	28				137	0	196	460	0.6	2.8	--	1260	552	440		1980	7.4	--
Oct. 20......	644					154	25				140	0	192	370	.8	2.7	--	1090	487	373		1680	7.9	--
Oct. 27......	871					--	--				--	--	--	450	--	--	.19	--	--	--		1940	8.0	.1
Nov. 7.......	945					183	27				167	0	190	470	.8	5.0	--	1440	568	431		2070	8.1	--
Nov. 11......	1140					--	--				--	--	--	420	--	--	.12	--	--	--		1850	8.1	.1
Nov. 27......	1340					111	23				154	0	174	180	.4	2.9	--	712	372	246		1140	7.2	--
Nov. 30......	2080					--	--				--	--	--	280	--	--	.14	--	--	--		1460	8.2	.1
Dec. 2.......	1940					143	26				150	0	184	310	.6	4.4	--	960	464	341		1560	8.0	--
Dec. 12......	5620					--	--				--	--	--	137	--	--	.20	--	--	--		884	7.9	.1
Dec. 17......	5910					64	15				74	0	119	75	.1	4.4	--	421	221	161		628	7.7	--
Dec. 24......	2480					--	--				--	--	--	117	--	--	.12	--	--	--		819	7.9	.1
Jan. 7, 1965.	7000					84	16				78	0	122	131	.6	4.6	--	504	276	212		817	7.1	--
Jan. 20......	3250					--	--				--	--	--	106	--	--	.09	--	--	--		780	7.9	.1
Jan. 23......	3800					--	--				--	--	--	90	--	--	.09	--	--	--		748	7.9	.1
Jan. 28......	21300					54	13				68	0	82	53	.2	6.0	--	329	188	133		489	7.7	--
Feb. 8.......	9360					--	--				--	--	--	112	--	--	.24	--	--	--		772	7.9	.1
Feb. 11......	24600					47	10				56	0	76	51	.2	7.2	--	285	158	112		437	6.9	--
Feb. 19......	7980					95	14				72	0	103	175	.2	6.4	--	684	295	236		901	7.2	--
Feb. 24......	4860					--	--				--	--	--	123	--	--	.18	--	--	--		814	7.3	.1

MUSKINGUM RIVER BASIN--Continued

3-1503. MUSKINGUM RIVER NEAR BEVERLY, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Detergent (MBAS)
																			Calcium, magnesium	Noncarbonate				
Mar. 1, 1965.	20800					47	9.4				47	0	80	52	0.1	4.5	--	307	156	117		444	7.5	--
Mar. 10......	16200					--	--				--	--	--	115	--	--	0.33	--	--	--		693	7.4	0.1
Mar. 17......	7950					90	14				81	0	118	124	.0	5.4	--	509	282	216		805	7.5	--
Mar. 24......	12600					--	--				--	--	--	88	--	--	.23	--	--	--		655	7.8	.1
Apr. 7.......	8290					--	--				--	--	--	85	--	--	.14	--	--	--		648	7.0	.0
Apr. 14......	18800					--	--				--	--	--	92	--	--	.14	--	--	--		594	6.9	.0
Apr. 23......	6570					129	26				95	0	34	282	.2	1.1	--	827	429	351		1240	8.2	--
Apr. 30......	13200					46	16				76	0	50	44	.1	2.7	--	274	181	119		438	7.0	--
May 1........	10300					47	18				71	0	98	54	.2	4.4	--	330	191	133		499	7.9	--
May 10.......	4460					--	--				--	--	--	72	--	--	.12	--	--	--		662	7.3	.0
May 15.......	3280					--	--				--	--	--	114	--	--	.17	--	--	--		839	7.4	.0
May 28.......	3680					90	28				102	0	195	120	.4	2.3	--	598	340	256		912	8.1	--
June 3.......	3130					85	20				108	0	142	112	.5	3.2	--	494	294	206		807	7.9	--
June 5.......	3230					--	--				--	--	--	170	--	--	.34	--	--	--		992	7.8	.1
June 15......	1760					132	23				118	0	153	280	.6	4.1	--	816	424	328		1340	7.1	--
June 21......	1370					--	--				--	--	--	248	--	--	.25	--	--	--		1210	7.9	.1
July 8.......	995					--	--				--	--	--	270	--	--	.17	--	--	--		1380	7.7	.0
July 13......	1420					--	--				--	--	--	295	--	--	.19	--	--	--		1470	7.9	.0
July 27......	1200					150	28				114	0	179	365	.9	3.6	--	1010	489	396		1660	7.1	--
July 31......	775					102	33				36	0	269	135	.4	4.0	--	684	390	361		1030	7.1	--
Aug. 6.......	835					--	--				--	--	--	240	--	--	.12	--	--	--		1510	--	.1
Aug. 9.......	1210					118	28				100	0	209	212	.6	4.0	--	716	410	328		1210	7.9	--
Aug. 12......	1250					166	27				100	0	229	412	.9	5.2	--	1240	526	443		1860	7.8	--
Aug. 21......	835					--	--				--	--	--	380	--	--	.17	--	--	--		1750	--	.1
Sept. 3......	5360					153	24				98	0	189	375	.6	7.7	--	1060	460	400		1680	7.0	--
Sept. 10.....	1580					84	16				70	0	159	110	.4	4.9	--	512	276	218		806	7.7	--
Sept. 18.....	3250					--	--				--	--	--	160	--	--	.13	--	--	--		989	--	.0
Sept. 27.....	1400					--	--				--	--	--	170	--	--	.16	--	--	--		1040	--	.0

MUSKINGUM RIVER BASIN--Continued

3-1503. MUSKINGUM RIVER NEAR BEVERLY, OHIO--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement between 0900 and 1400)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	--	--	1520	--	637	444	582	499	927	1170	--	1460
2......	--	1720	1560	633	671	--	576	--	904	1150	--	1610
3......	--	1700	1550	--	672	451	612	518	807	1160	1240	1680
4......	--	1730	--	685	688	473	--	549	893	--	1300	1230
5......	--	1790	--	--	741	492	550	574	992	--	1300	--
6......	1870	1930	--	785	756	546	594	629	--	1250	1310	--
7......	--	2070	--	819	--	--	648	638	868	1340	1310	1240
8......	--	--	--	614	772	579	608	661	852	1380	--	1080
9......	1810	--	1040	628	--	574	568	--	913	1380	1210	808
10......	1800	2020	1050	--	748	693	524	662	870	1350	1280	806
11......	--	1850	880	704	437	717	--	679	929	--	1690	--
12......	1980	1840	884	719	--	626	502	683	1080	1460	1860	--
13......	1910	1840	--	--	459	653	502	716	--	1470	1750	--
14......	--	1720	777	--	--	--	594	788	1230	1420	1620	--
15......	1800	--	762	643	476	766	518	839	1340	1350	--	886
16......	1780	1650	679	625	735	782	--	--	1280	1360	1600	842
17......	1750	1570	628	--	745	805	521	740	922	1390	1640	956
18......	--	1500	--	678	--	758	--	776	907	--	1680	989
19......	1690	1440	--	679	901	616	564	778	946	1420	1710	--
20......	1680	1310	--	780	659	655	552	822	--	1430	1730	--
21......	1700	1210	643	737	--	--	587	856	1210	1400	1750	994
22......	1730	--	688	737	713	635	691	858	1100	--	--	922
23......	1730	1250	784	748	748	598	1240	--	1020	--	1740	846
24......	1790	1240	819	--	814	655	770	873	1010	1330	1700	--
25......	--	1230	--	--	706	604	--	856	1020	--	1670	931
26......	--	--	796	620	531	488	529	871	1050	1600	1620	--
27......	1940	1140	--	489	535	488	457	--	--	1660	1580	1040
28......	1880	1280	764	489	--	--	450	912	1080	1530	1580	--
29......	--	--	729	598	--	520	453	--	1180	1360	--	1000
30......	1730	1460	--	742	--	548	438	--	1130	1330	1690	971
31......	1690	--	644	--	--	537	--	--	--	1030	1570	--
Average	--	--	--	--	--	603	585	--	1020	1360	1570	--

MUSKINGUM RIVER BASIN--Continued

3-1503. MUSKINGUM RIVER NEAR BEVERLY, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 0900 and 1400)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	--	--	--	--	--	72	--	--	70	69	--	68	68	--	70	70	70	--	71	70	69	67	67	65	--	--	63	63	--	63	63	--
November	--	62	62	62	62	61	62	--	--	58	58	58	58	58	--	64	61	58	59	57	50	--	50	50	49	--	50	50	--	47	--	--
December	44	42	44	--	--	--	--	--	38	38	38	40	--	42	41	40	41	--	--	--	37	37	37	38	--	41	--	44	43	--	43	--
January	--	43	--	41	--	40	40	41	42	--	42	41	--	--	39	37	--	37	37	37	38	37	37	--	--	42	40	39	37	35	--	--
February	38	37	36	35	34	36	--	35	--	38	47	--	45	--	42	42	42	--	42	42	--	40	40	39	44	38	38	--	--	--	--	--
March	38	--	44	45	47	47	--	44	43	42	43	43	45	--	44	43	44	44	44	43	--	41	42	42	42	42	43	--	46	46	45	44
April	46	46	47	--	47	47	49	50	58	60	--	56	56	56	57	--	51	--	55	52	51	51	57	57	--	54	54	55	55	55	--	53
May	57	--	58	66	67	70	70	70	--	72	73	72	74	73	73	--	75	72	73	73	73	73	--	75	83	90	--	86	--	--	--	--
June	87	85	87	87	88	--	75	76	76	77	77	77	--	77	78	78	78	78	76	--	78	77	80	81	79	78	--	81	83	84	--	80
July	83	85	84	--	--	83	83	83	84	84	--	83	84	85	86	88	88	--	88	88	86	--	--	84	--	86	86	85	84	83	85	--
August	--	--	84	84	85	84	85	--	83	83	80	80	85	85	--	92	95	90	90	87	87	--	87	87	87	87	87	84	--	79	78	85
September	79	76	75	--	--	--	77	75	76	78	--	--	--	--	76	74	74	76	--	--	77	80	78	--	76	--	75	--	77	78	--	--

HOCKING RIVER BASIN

3-1595. HOCKING RIVER AT ATHENS, OHIO

LOCATION.--At gaging station at Mill Street Bridge at Athens, Athens County, 3.5 miles downstream from Margaret Creek.
DRAINAGE AREA.--943 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1965.
Water temperatures: October 1954 to September 1965.
Sediment records: October 1956 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 1,450 micromhos Nov. 5; minimum daily, 276 micromhos Apr. 13.
Water temperatures: Maximum, 78°F Aug. 17-19; minimum, freezing point Jan. 31 to Feb. 5, Feb. 27.
Sediment concentrations: Maximum daily, 1,040 ppm Feb. 25; minimum daily, 2 ppm Nov. 28, 29, July 17.
Sediment loads: Maximum daily, 12,000 tons Apr. 12; minimum daily, less than 0.50 ton Nov. 28, 29, July 17, Aug. 25.
EXTREMES, 1954-65.--Specific conductance: Maximum daily, 2,080 micromhos Aug. 11, 1962; minimum daily, 192 micromhos Jan. 22, 1959.
Water temperatures: Maximum, 84°F Aug. 7, 1955; minimum, freezing point on many days during winter months.
Sediment concentrations (1956-65): Maximum daily, 1,320 ppm July 8, 1958; minimum daily, 1 ppm on many days during 1956-62.
Sediment loads (1956-65): Maximum daily, 44,000 tons Mar. 5, 1963; minimum daily, less than 0.50 ton on many days most years.
REMARKS.--Samples for iron and manganese were filtered clear when collected. Daily samples collected at this station and samples were selected for analyses on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) special sample each month to further define quality of water, and (4) composite analysis of all daily samples for the month. No special sample was collected for the month of September. Some regulation of flow by Burr Oak Reservoir on East Branch Sunday Creek and by Hocking Lake on Clear Fork. Diurnal fluctuation at low flow caused by mill above station. Flow affected by ice Jan. 19-21, 30, 31, Feb. 1-5.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$ Calcium, magnesium	Hardness as $CaCO_3$ Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed Filtered	Oxygen consumed Unfiltered
Oct. 1, 1964..	57			--	--						74	0	374	102	0.1	3.2	--	790	416	355	--	1150	7.5		--	--
Oct. 21.......	52			--	--						66	0	461	150	.2	3.7	--	1020	517	463	--	1410	7.5		--	--
Oct. 29.......	49			0.01	0.04						--	--	--	--	--	--	0.90	--	--	--	--	--	--		4	5
Oct. 1-31.....	48.1			--	--						68	0	432	140	.2	3.4	--	972	490	434	--	1340	7.5		--	--
Nov. 5........	56			--	--						21	0	540	127	.4	3.2	--	1020	524	507	--	1450	6.1		--	--
Nov. 23.......	79			.26	2.3						--	--	--	--	--	--	.11	--	--	--	--	--	--		1	1
Nov. 26.......	80			--	--						48	0	416	98	.4	4.5	--	812	440	400	--	1180	7.1		--	--
Nov. 1-30.....	64.8			--	--						49	0	464	122	.4	4.0	--	926	486	446	--	1330	6.9		--	--
Dec. 3........	79			--	--						12	0	494	115	.4	5.0	--	974	516	506	--	1320	6.9		--	--
Dec. 23.......	117			2.8	3.8						--	--	--	--	--	--	.04	--	--	--	--	--	--		2	2
Dec. 28.......	1330			--	--						19	0	171	66	.4	6.1	--	364	226	211	--	627	7.2		--	--
Dec. 1-31.....	344			--	--						23	0	355	101	.4	5.3	--	718	406	387	--	1060	6.8		--	--
Jan. 20, 1965	270			4.9	2.6						--	--	--	--	--	--	.05	--	--	--	--	--	--		2	2
Jan. 23.......	280			--	--						88	0	239	124	.1	5.2	--	598	364	308	--	968	7.3		--	--
Jan. 26.......	1600			--	--						36	0	129	54	.1	6.2	--	308	202	173	--	524	6.7		--	--
Jan. 1-31.....	751			--	--						44	0	192	88	.1	5.2	--	467	288	252	--	740	7.1		--	--
Feb. 6........	225			--	--						82	0	234	110	.2	5.6	--	642	372	305	--	946	6.8		--	--
Feb. 24.......	394			.87	1.6						--	--	--	--	--	--	.08	--	--	--	--	--	--		1	1
Feb. 26.......	3380			--	--						26	0	98	38	.1	2.7	--	244	144	123	--	393	6.3		--	--
Feb. 1-28.....	1385			--	--						54	0	180	70	.2	5.2	--	444	252	208	--	652	6.8		--	--

HOCKING RIVER BASIN--Continued

3-1595. HOCKING RIVER AT ATHENS, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed	
																			Calcium, magnesium	Noncarbonate					Filtered	Unfiltered
Mar. 17, 1965.	1120			--	--						54	0	175	70	0.1	6.1	--	414	269	225	--	678	7.3		--	--
Mar. 19.......	3290			--	--						40	0	92	36	.1	5.6	--	228	154	121	--	393	7.4		--	--
Mar. 28.......	1740			0.84	1.1						--	--	--	--	--	--	0.10	--	--	--	--	--	--		1	3
Mar. 1-31.....	1728			--	--						42	0	130	50	.0	4.8	--	328	200	166	--	524	7.0		--	--
Apr. 13.......	8470			--	--						34	0	69	13	.2	3.9	--	174	112	84	--	276	6.6		--	--
Apr. 22.......	1090			1.1	1.5						--	--	--	--	--	--	.08	--	--	--	--	--	--		1	2
Apr. 24.......	1100			--	--						50	0	197	76	.3	3.6	--	440	264	223	--	631	7.5		--	--
Apr. 1-30.....	3095			--	--						43	0	127	35	.3	3.6	--	303	188	153	--	474	6.9		--	--
May 1.........	1560			--	--						64	0	149	38	.0	4.1	--	344	223	171	--	533	8.0		--	--
May 25........	318			--	--						25	0	398	55	.0	2.3	--	726	403	382	--	989	7.6		--	--
May 28........	374			.13	2.2						--	--	--	--	--	--	.16	--	--	--	--	--	--		2	1
May 1-31......	495			--	--						72	0	254	57	.0	2.4	--	545	330	271	--	782	7.5		--	--
June 12.......	199			--	--						84	0	203	62	.3	4.3	--	492	298	229	--	745	8.2		--	--
June 27.......	94			--	--						96	0	354	100	.3	1.9	--	782	462	383	--	1110	7.3		--	--
June 29.......	89			.11	.40						--	--	--	86	--	--	.08	--	--	--	--	--	--		--	--
June 1-30.....	160			--	--						82	0	320	74	.2	2.6	--	709	414	347	--	973	7.5		--	--
July 24.......	495			--	--						2	0	471	128	.5	.4	--	922	464	462	0.4	1270	4.6		--	--
July 26.......	255			.11	7.6						--	--	--	101	--	--	.03	--	--	--	--	--	--		--	--
July 29.......	113			--	--						1	0	356	64	.4	1.0	--	630	395	394	.4	883	4.7		--	--
July 1-31.....	133			--	--						48	0	387	100	.3	1.2	--	768	457	417	--	1100	7.2		--	--
Aug. 2........	82			--	--						40	0	312	88	.3	3.2	--	632	386	353	--	946	7.3		--	--
Aug. 16.......	71			--	--						20	0	434	160	.2	2.1	--	938	517	500	--	1340	6.5		--	--
Aug. 26.......	71			.00	3.0						--	--	--	--	--	--	.08	--	--	--	--	--	--		1	1
Aug. 1-31.....	86.3			--	--						22	0	420	102	.3	1.5	--	836	468	450	--	1160	6.9		--	--
Sept. 10......	121			--	--						32	0	288	186	.0	5.2	--	712	428	402	--	1200	6.8		--	--
Sept. 13......	3840			--	--						8	0	138	56	.0	1.8	--	316	178	172	--	510	5.9		--	--
Sept. 1-30....	522			--	--						30	0	268	114	.1	3.1	--	580	352	327	--	940	7.1		--	--

HOCKING RIVER BASIN--Continued

3-1595. HOCKING RIVER AT ATHENS, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor[a]
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 29, 1964	7.6	70		0.4				3	0
Nov. 23	11.4	88		.2				4	0
Dec. 23	12.2	88		.1				30	0
Jan. 20, 1965	9.8	68		.2				50	0
Feb. 24	12.0	86		.1				50	0
Mar. 28	9.2	73		.0				65	M-2
Apr. 22	7.8	77		.1				30	E-2
May 28	6.4	74		.1				4	0
June 29	6.6	80		.0				--	0
July 26	6.6	80		.1				--	0
Aug. 26	--	--		.0				--	M-2

a The dilution ratio at which odor is just detectable; M-musty, E-earthy.

HOCKING RIVER BASIN--Continued

3-1595. HOCKING RIVER AT ATHENS, OHIO--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement between 0600 and 0700)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	1150	1330	1270	824	790	506	476	533	869	1130	973	978
2......	1220	1360	1270	798	830	501	513	576	931	1120	946	1190
3......	1250	1340	1320	804	865	508	534	594	897	1100	971	691
4......	1260	1430	1150	575	886	539	549	630	912	1080	1020	844
5......	1300	1450	1180	580	915	527	567	643	938	1080	1060	771
6......	1280	1370	1230	648	946	474	620	696	917	1080	1070	834
7......	1280	1410	1150	712	941	480	553	708	859	1120	1070	870
8......	1330	1380	1240	729	645	524	414	730	901	1160	1150	976
9......	1360	1370	1130	798	506	525	364	613	946	1150	1100	960
10......	1380	1350	1110	816	453	548	350	738	950	1100	1090	1200
11......	1300	1370	1110	809	426	575	387	738	917	1060	1140	1130
12......	1280	1410	1040	760	447	577	319	755	745	1090	1220	1040
13......	1310	1420	1040	674	459	612	276	772	778	1040	1320	510
14......	1350	1350	971	683	454	627	311	774	869	1180	1220	691
15......	1340	1390	971	749	520	665	420	810	888	1160	1240	623
16......	1320	1330	951	768	604	652	464	824	943	1160	1340	744
17......	1340	1330	997	635	618	678	448	822	943	1120	1270	973
18......	1390	1360	961	869	666	515	481	886	948	1100	1160	866
19......	1330	1360	1030	873	684	393	517	895	1000	1180	1180	936
20......	1380	1290	1100	888	681	413	580	863	1040	1200	1130	950
21......	1410	1280	1070	912	694	507	599	869	994	1180	1160	960
22......	1380	1360	1170	908	724	519	626	897	1000	1220	1160	989
23......	1410	1260	1120	968	759	543	628	886	1040	1040	1140	1010
24......	1350	1320	1100	912	772	550	631	876	1090	1270	1190	1060
25......	1410	1290	1070	795	573	470	599	989	1050	1150	1170	960
26......	1380	1180	1140	524	393	426	387	908	1040	1000	1160	1120
27......	1340	1220	916	528	410	482	296	822	1110	1090	1310	1060
28......	1380	1190	627	550	448	471	316	824	1050	1110	1300	1130
29......	1370	1220	650	598	--	486	408	767	1050	883	1310	1140
30......	1370	1220	726	629	--	394	480	893	1080	968	1260	1130
31......	1340	--	786	701	--	429	--	801	--	961	1240	--
Average	1330	1330	1050	744	646	519	490	778	956	1110	1160	944

HOCKING RIVER BASIN--Continued

3-1595. HOCKING RIVER AT ATHENS, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 0600 and 0700)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	60	63	60	60	58	54	53	48	55	48	48	48	50	52	51	52	53	54	54	50	48	54	48	46	46	46	46	48	50	50	48	52
November	48	50	50	50	50	48	46	47	46	46	47	50	51	47	47	54	52	50	50	47	43	40	40	38	42	40	39	40	40	—	—	46
December	35	38	39	40	37	40	37	37	37	35	38	40	41	40	38	35	40	33	33	33	33	34	34	36	40	44	45	42	42	41	41	38
January	41	42	41	38	36	35	38	39	42	42	38	36	35	34	33	33	33	33	33	33	33	33	33	34	35	37	37	35	33	33	32	36
February	32	32	32	32	32	33	33	44	34	38	38	44	43	38	38	35	35	37	38	36	36	34	33	33	35	33	32	34	—	—	—	36
March	37	—	44	45	43	45	39	39	—	40	38	38	37	37	37	39	42	42	42	40	35	35	40	40	39	39	38	39	40	40	38	40
April	38	40	42	44	44	44	44	54	53	51	51	53	54	54	51	51	51	51	52	53	54	56	58	59	59	52	53	50	50	48	—	50
May	54	57	62	67	68	65	67	67	67	69	69	68	65	63	—	66	66	66	67	66	66	65	67	69	71	72	73	71	67	66	65	66
June	65	67	68	66	67	70	70	71	71	72	72	73	72	70	71	70	68	66	66	67	68	70	72	74	71	72	72	74	75	77	—	70
July	73	73	76	73	75	74	75	75	76	77	75	73	73	75	76	75	76	76	74	74	72	73	75	75	77	77	76	75	73	72	72	75
August	73	71	70	69	70	73	75	77	73	73	71	70	71	75	75	77	78	78	78	76	74	74	75	74	73	74	75	74	69	69	69	73
September	70	65	65	66	68	69	69	69	70	71	74	72	67	67	67	68	68	70	72	70	72	69	72	71	67	65	65	63	60	60	—	68

HOCKING RIVER BASIN--Continued

3-1595. HOCKING RIVER AT ATHENS, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	57	10	2	65	9	2	74	4	1
2..	56	9	1	66	9	2	71	5	1
3..	54	9	1	62	9	2	79	5	1
4..	54	9	1	60	10	2	125	18	6
5..	52	9	1	56	11	2	193	17	9
6..	45	8	1	45	11	1	229	11	7
7..	42	7	1	49	12	2	168	7	3
8..	41	7	1	48	11	1	123	6	2
9..	40	7	1	52	11	2	105	5	1
10..	42	7	1	50	10	1	96	5	1
11..	42	6	1	46	10	1	111	10	3
12..	44	5	1	50	10	1	613	--	E 440
13..	45	6	1	60	10	2	940	94	239
14..	42	6	1	49	10	1	480	38	49
15..	45	7	1	53	10	1	295	17	14
16..	52	6	1	62	10	2	208	14	8
17..	41	6	1	60	10	2	173	13	6
18..	44	6	1	62	10	2	161	11	5
19..	49	7	1	70	10	2	130	10	4
20..	41	7	1	77	10	2	134	10	4
21..	52	7	1	85	10	2	127	10	3
22..	57	7	1	82	10	2	119	10	3
23..	41	7	1	79	9	2	117	10	3
24..	40	7	1	69	8	1	119	10	3
25..	45	7	1	74	7	1	178	42	20
26..	50	7	1	80	5	1	709	500	B 950
27..	49	7	1	83	3	1	1920	399	2070
28..	48	8	1	85	2	T	1330	73	262
29..	49	8	1	83	2	T	670	33	60
30..	60	8	1	82	3	1	485	23	30
31..	71	9	2	--	--	--	394	21	22
Total	1490	--	33	1944	--	45	10676	--	4230

Day	JANUARY			FEBRUARY			MARCH		
1..	330	20	18	320	16	14	1860	84	422
2..	1270	101	S 497	280	15	11	1590	89	382
3..	2620	334	2360	260	14	10	1720	79	367
4..	1710	108	S 536	240	13	8	1810	81	396
5..	919	29	72	230	12	7	1990	168	903
6..	670	14	25	225	11	7	2160	196	1140
7..	520	10	14	542	67	S 151	1760	88	418
8..	465	10	12	2170	301	S 1920	1490	57	229
9..	545	11	16	3100	478	4000	1310	49	173
10..	779	17	36	3660	287	2840	1200	45	146
11..	779	19	40	3630	285	2790	1070	42	121
12..	718	15	29	2800	195	1470	933	39	98
13..	604	12	20	2530	282	1930	835	35	79
14..	540	12	17	1680	162	735	765	31	64
15..	442	12	14	1170	109	344	724	26	51
16..	398	13	14	877	74	175	670	21	38
17..	338	14	13	751	53	107	1120	82	S 374
18..	307	15	12	664	41	74	3440	427	3960
19..	280	16	12	599	33	53	3290	340	3020
20..	270	16	12	530	25	36	2110	149	849
21..	260	17	12	470	19	24	1440	105	408
22..	259	17	12	455	17	21	1150	66	205
23..	280	19	14	382	16	16	1100	41	122
24..	740	70	S 183	394	55	S 73	1870	94	475
25..	1890	176	898	2980	1040	S 9370	2440	161	1060
26..	1600	98	423	3380	420	3830	2420	144	941
27..	1300	58	204	2300	158	981	2400	110	713
28..	989	36	96	2170	109	639	1740	79	371
29..	610	23	38	--	--	--	2120	106	S 698
30..	460	18	22	--	--	--	3000	260	2110
31..	390	17	18	--	--	--	2030	108	592
Total	23282	--	5689	38789	--	31636	53557	--	20925

E Estimated.
S Computed by subdividing day.
T Less than 0.50 ton.
B Computed from estimated-concentration graph.

HOCKING RIVER BASIN--Continued

3-1595. HOCKING RIVER AT ATHENS, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965--Continued

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	1510	61	249	1560	69	291	196	7	4
2..	1440	57	222	1290	50	174	199	8	4
3..	1350	52	190	1090	21	62	219	9	5
4..	1140	38	117	884	28	67	222	9	5
5..	968	31	81	772	16	33	196	10	5
6..	1230	63	S 248	694	15	28	170	10	5
7..	2940	244	1940	634	15	26	180	10	5
8..	2690	189	1370	700	15	28	190	10	5
9..	4350	470	5520	561	15	23	259	10	7
10..	4540	457	5600	505	15	20	362	10	10
11..	3830	295	3050	465	15	19	259	10	7
12..	6590	676	12000	455	14	17	199	10	5
13..	8470	354	8100	410	14	15	170	10	5
14..	6860	172	3180	370	11	11	156	11	5
15..	3820	183	1890	346	9	8	145	11	4
16..	3450	161	1500	322	7	6	138	11	4
17..	2810	141	1070	322	7	6	130	11	4
18..	2140	101	584	307	7	6	127	11	4
19..	1770	85	406	295	7	6	125	12	4
20..	1460	73	288	269	7	5	119	14	4
21..	1220	60	198	248	8	5	121	13	4
22..	1090	53	156	229	8	5	109	14	4
23..	1060	47	134	219	7	4	107	15	4
24..	1100	58	172	330	6	5	111	15	4
25..	2590	211	S 1600	318	7	6	111	15	4
26..	5550	356	5330	299	7	6	105	15	4
27..	6400	242	4180	318	7	6	94	15	4
28..	5520	152	2260	374	7	7	94	13	3
29..	2880	140	1090	287	7	5	89	12	3
30..	2080	91	511	248	7	5	87	12	3
31..	--	--	--	216	7	4	--	--	--
Total	92848	--	63236	15337	--	909	4789	--	138

Day	JULY			AUGUST			SEPTEMBER		
1..	85	12	3	92	20	5	377	56	57
2..	83	12	3	82	20	4	1220	55	181
3..	82	11	2	82	19	4	505	15	20
4..	79	10	2	82	18	4	229	6	4
5..	82	10	2	82	18	4	166	3	1
6..	85	10	2	79	17	4	152	3	1
7..	87	10	2	77	16	3	180	3	1
8..	96	10	3	101	16	4	173	3	1
9..	98	10	3	150	16	6	141	3	1
10..	138	12	4	176	16	8	121	3	1
11..	202	13	7	126	16	5	121	7	2
12..	166	11	5	99	15	4	1440	134	S 985
13..	132	9	3	85	15	3	3840	299	3100
14..	105	7	2	79	14	3	1790	115	556
15..	92	6	1	74	14	3	919	58	144
16..	89	4	1	71	12	2	870	31	73
17..	83	2	T	66	11	2	622	18	30
18..	87	3	1	77	10	2	424	10	11
19..	90	3	1	98	9	2	322	10	9
20..	75	3	1	99	7	2	266	10	7
21..	72	3	1	74	5	1	222	10	6
22..	72	3	1	69	4	1	196	10	5
23..	266	15	11	65	3	1	186	10	5
24..	495	23	31	63	3	1	188	10	5
25..	314	22	19	59	3	T	193	10	5
26..	255	21	14	71	4	1	183	11	5
27..	168	20	9	75	4	1	166	11	5
28..	134	20	7	85	4	1	152	11	5
29..	113	20	6	82	4	1	143	11	4
30..	96	20	5	80	4	1	141	11	4
31..	89	20	5	74	4	1	--	--	--
Total	4110	--	157	2674	--	84	15648	--	5234

Total discharge for year (cfs-days).. 265144
Total load for year (tons).. 132316

S Computed by subdividing day.
T Less than 0.50 ton.

HOCKING RIVER BASIN--Continued

3-1595. HOCKING RIVER AT ATHENS, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Dec. 27, 1964......	0900			2070	446		52	60	73	85	92	96	100	--	--			SBWC
Apr. 26, 1965......	1120			5650	336		32	46	58	72	86	93	96	98	100			SBWC
Apr. 26............	1120			5650	336		8	14	25	41	73	78	93	97	100			SBN

KANAWHA RIVER BASIN

3-1800. NEW RIVER AT BLUESTONE DAM, W. VA.

LOCATION.--Temperature recorder at Bluestone Dam Stilling Basin, 1,000 feet upstream from gaging station, 0.9 mile upstream from mouth of Greenbrier River, and 2.2 miles upstream from Hinton, Summers County.
DRAINAGE AREA.--4,604 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1953 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 81°F on several days in July and August; minimum, freezing point Feb. 5-8.
EXTREMES, 1953-65.--Water temperatures: Maximum, 85°F Aug. 26, 1959; minimum, freezing point on several days during winter months 1958, 1961-65.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	67	68	68	68	68	66	63	62	62	61	59	59	58	58	57	57	57	58	59	59	59	57	55	54	53	53	53	54	54	54	55	59
Minimum	67	67	68	68	66	63	62	61	61	59	58	58	58	57	57	57	57	57	58	59	57	55	54	53	53	53	53	52	53	54	53	58
November																																
Maximum	56	57	57	56	56	55	55	55	54	53	53	53	52	52	53	53	54	53	54	55	55	55	52	50	48	46	48	49	49	49	--	53
Minimum	55	55	55	55	55	55	54	54	53	52	52	52	51	51	52	53	53	53	53	54	55	52	50	48	45	44	45	48	49	48	--	52
December																																
Maximum	48	47	43	41	42	45	45	45	44	42	40	42	43	45	45	44	43	41	40	38	38	37	37	37	40	44	46	48	46	44	43	43
Minimum	47	43	41	40	40	42	45	44	42	40	40	40	42	43	44	43	41	40	38	38	37	37	36	36	37	40	44	46	44	43	42	41
January																																
Maximum	43	43	42	42	42	40	40	40	42	44	44	42	41	41	40	39	37	36	36	35	34	35	37	38	43	43	43	43	41	39	39	40
Minimum	43	42	42	42	40	40	39	39	40	42	42	41	41	40	39	37	36	36	34	33	34	34	35	37	38	42	43	41	39	39	38	39
February																																
Maximum	38	36	36	34	34	33	32	38	41	41	42	43	44	44	44	42	40	41	42	42	42	41	41	40	39	39	36	37	--	--	--	39
Minimum	36	36	34	34	32	32	32	32	38	41	41	42	43	44	42	40	40	40	41	42	41	41	39	39	39	36	34	35	--	--	--	38
March																																
Maximum	39	43	44	44	43	43	42	40	40	42	42	41	41	41	42	43	44	45	45	45	45	43	41	43	47	48	47	46	46	49	49	44
Minimum	37	39	43	43	43	42	40	40	40	40	41	40	40	41	41	42	43	44	45	45	43	41	40	40	43	47	46	46	46	46	48	42
April																																
Maximum	48	49	49	48	49	51	53	55	55	55	56	56	57	57	57	56	54	54	56	57	58	58	59	61	61	61	61	60	59	57	--	56
Minimum	48	48	48	48	47	49	51	53	54	55	55	55	56	57	56	54	53	52	54	56	57	57	57	59	61	61	60	59	57	57	--	54
May																																
Maximum	58	61	63	65	66	67	68	68	69	69	68	68	68	68	68	69	69	69	69	71	71	71	71	70	71	72	73	74	73	73	72	69
Minimum	56	58	61	63	65	65	67	67	68	68	67	67	68	67	67	67	67	68	68	69	71	70	70	70	70	71	72	72	72	72	71	68
June																																
Maximum	71	72	72	71	72	73	73	74	74	75	76	76	76	76	76	75	74	71	70	70	71	72	74	73	75	75	77	77	78	77	--	74
Minimum	70	71	71	71	71	72	73	73	73	74	75	75	75	75	75	74	71	70	68	68	69	70	71	73	73	75	75	75	76	76	--	73
July																																
Maximum	77	78	78	77	77	77	77	77	79	79	79	79	79	79	79	79	79	80	79	79	79	80	80	81	81	81	81	80	80	80	80	79
Minimum	76	76	77	77	77	76	76	76	77	79	79	78	78	78	78	78	78	79	78	78	79	78	79	79	80	80	80	80	80	79	80	78
August																																
Maximum	80	80	79	78	77	76	76	77	77	77	77	77	78	79	79	79	80	80	81	81	80	80	80	79	79	80	79	79	78	77	76	79
Minimum	80	79	78	77	76	76	76	76	77	77	76	76	77	78	78	78	79	79	79	80	79	79	79	79	79	79	79	78	77	76	76	78
September																																
Maximum	76	76	75	75	75	75	74	74	75	75	75	75	75	75	76	76	76	76	77	78	78	78	78	77	76	75	74	72	71	71	--	75
Minimum	76	75	74	74	74	74	74	74	74	75	74	74	75	75	75	74	74	76	76	77	77	78	77	76	75	74	72	71	71	70	--	74

KANAWHA RIVER BASIN--Continued

3-1S20. KNAPP CREEK AT MARLINTON, W. VA.

LOCATION.--At city waterplant, at Marlinton, Pocahontas County, 1 mile upstream from mouth, and 2 miles downstream from discontinusd gaging station.
DRAINAGE AREA.--108 square miles (at discontinued gaging station).
RECORDS AVAILABLE.--Water temperatures: October 1946 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 71°F July 25; minimum, freezing point on many days during winter months.
EXTREMES, 1946-65.--Water temperatures: Maximum, 82°F July 24, 1952, and June 2, 1959; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	61	60	62	60	59	58	56	56	55	56	55	54	54	55	55	56	56	52	46	42	43	40	38	38	37	38	39	38	39	39	38	50
November	43	42	42	40	40	40	38	36	34	36	36	38	40	38	43	45	46	45	46	45	44	34	32	32	36	37	38	38	40	39	--	39
December	37	35	35	38	40	36	32	34	35	34	36	38	45	37	33	32	33	32	32	34	33	34	35	36	38	38	38	38	38	40	38	36
January	38	33	32	32	33	34	34	38	38	36	33	32	32	32	32	32	32	32	32	32	32	32	34	35	35	34	35	34	33	33	32	33
February	32	33	32	33	32	33	33	35	38	37	38	40	38	35	32	33	35	37	35	32	32	32	32	32	32	32	32	34	--	--	--	34
March	35	36	36	37	35	35	32	33	33	32	32	33	32	32	32	32	34	36	36	35	32	32	33	33	35	35	35	37	37	35	35	34
April	35	34	34	35	39	42	45	46	47	41	42	44	42	40	38	38	36	43	42	43	42	48	49	48	44	46	45	44	45	46	--	42
May	46	50	52	54	55	55	55	55	53	54	55	55	52	52	54	56	53	57	58	59	59	58	58	60	60	58	60	60	54	54	55	55
June	56	60	63	59	59	59	60	61	62	62	62	62	66	65	63	56	55	58	56	57	58	58	60	60	61	60	62	65	67	67	--	61
July	67	64	65	65	64	62	62	64	64	65	68	69	67	69	68	66	66	67	66	65	66	67	67	66	71	70	67	66	67	64	64	66
August	64	62	60	60	62	64	64	66	66	66	67	68	66	67	66	68	68	67	66	65	64	64	66	65	65	64	66	66	62	60	60	65
September	61	60	60	60	60	62	62	63	64	65	66	65	63	63	65	66	65	64	65	64	63	64	54	63	62	64	59	63	54	59	--	63

KANAWHA RIVER BASIN--Continued

3-1930. KANAWHA RIVER AT KANAWHA FALLS, W. VA.

LOCATION.--Temperature recorder at gaging station on right bank, 150 feet downstream from toll bridge, 0.8 mile downstream from village of Kanawha Falls, Fayette County, 2 miles downstream from Gauley Bridge, and 2 miles downstream from confluence of New River and Gauley River.
DRAINAGE AREA.--8,367 square miles.
RECORDS AVAILABLE.--Water temperatures: December 1957 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 81°F July 24 and Aug. 18; minimum, 35°F on several days in January and February.
EXTREMES, 1957-65.--Water temperatures: Maximum, 83°F Aug. 20, 1959 and June 29, July 28, 29, 1964; minimum, freezing point on several days during 1958-60 and 1963.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	62	64	64	64	63	59	59	59	58	57	57	56	56	56	56	56	57	58	59	59	58	57	56	55	55	54	53	53	54	54	56	58
Minimum	61	62	64	63	59	58	58	58	57	56	56	55	56	56	56	56	56	57	58	58	57	56	55	55	53	53	52	52	53	54	54	57
November																																
Maximum	56	56	57	56	55	55	55	55	54	55	54	53	52	52	53	54	60	54	54	54	54	51	48	46	44	44	46	47	47	47	--	52
Minimum	56	56	55	55	55	55	54	54	54	53	52	52	52	52	52	53	54	54	54	54	51	48	46	44	44	43	44	46	47	45	--	51
December																																
Maximum	45	42	41	44	47	47	45	41	40	40	41	43	46	46	45	42	39	39	39	38	37	37	38	40	42	45	46	46	46	44	44	42
Minimum	42	41	40	40	44	45	41	40	40	40	40	41	43	45	42	39	39	39	37	37	37	37	37	38	40	42	45	46	44	44	44	41
January																																
Maximum	44	44	44	44	40	39	40	42	43	43	43	42	41	41	39	38	38	37	36	36	36	36	36	38	41	41	41	41	40	38	37	40
Minimum	44	44	44	40	39	39	39	40	42	43	42	41	41	39	38	38	37	36	36	35	35	36	36	36	38	41	41	40	38	37	36	39
February																																
Maximum	36	35	35	35	35	35	35	38	42	44	45	46	46	46	43	42	41	41	41	41	40	40	40	40	39	39	37	37	--	--	--	40
Minimum	35	35	35	35	35	35	35	35	38	42	44	45	46	43	42	41	41	41	41	40	40	40	39	39	39	37	36	36	--	--	--	39
March																																
Maximum	39	41	43	44	44	44	41	41	40	40	40	40	40	41	42	43	43	43	44	44	42	40	42	43	43	45	45	46	47	48	48	43
Minimum	37	39	41	43	44	41	41	40	40	40	40	40	40	40	41	41	43	43	43	42	39	39	40	42	43	43	45	44	46	47	47	42
April																																
Maximum	48	48	47	47	48	50	53	54	54	53	52	52	52	52	51	51	50	52	53	53	54	56	57	59	60	60	58	55	53	54	--	53
Minimum	47	47	46	46	47	48	50	53	53	51	51	52	52	51	51	50	48	49	52	52	52	54	56	57	59	58	55	53	51	52	--	51
May																																
Maximum	57	60	62	64	64	67	68	69	69	69	69	69	68	67	68	69	69	71	70	71	70	70	72	74	75	75	75	74	74	72	72	69
Minimum	54	57	60	62	64	64	66	68	69	69	69	68	67	66	66	67	68	69	69	70	70	69	70	72	73	73	74	73	72	71	70	68
June																																
Maximum	72	73	73	72	72	73	73	75	75	77	77	76	77	77	76	75	74	72	71	71	72	72	74	74	75	75	76	76	77	77	--	74
Minimum	70	71	72	72	71	72	72	73	75	75	76	76	76	76	75	74	72	71	70	70	70	70	72	73	73	75	75	76	76	77	--	73
July																																
Maximum	--	78	78	78	77	78	78	78	80	80	79	80	80	80	80	80	80	78	78	79	79	79	79	81	80	80	80	79	79	79	78	79
Minimum	--	77	77	77	77	77	78	78	78	79	79	78	79	79	79	79	78	78	78	78	78	78	78	78	79	79	79	79	79	78	78	78
August																																
Maximum	78	76	75	74	74	74	75	76	78	76	75	76	76	77	78	79	79	81	79	79	79	79	79	79	78	78	78	78	77	76	75	77
Minimum	76	75	73	73	73	74	74	75	76	69	73	75	75	75	77	78	77	76	78	78	78	78	79	75	74	77	77	77	75	75	73	75
September																																
Maximum	76	75	76	74	--	--	--	--	--	--	--	--	--	--	--	76	76	76	77	77	77	78	77	77	76	74	72	71	70	69	--	--
Minimum	74	71	71	72	--	--	--	--	--	--	--	--	--	--	--	75	75	78	76	76	77	77	77	76	74	72	71	70	69	68	--	--

KANAWHA RIVER BASIN--Continued

3-1937.7. KANAWHA RIVER AT CABIN CREEK, W. VA.

LOCATION.--At the Appalachian Electric Power Company, Cabin Creek steam electric cooling water intakes, at Cabin Creek, Kanawha County.
DRAINAGE AREA.--8,661 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1965.
EXTREMES, 1950-65.--Water temperatures: Maximum, 92°F on several days in August 1955 and 1959; minimum, freezing point Feb. 10, 1951, Feb. 14-16, 1958, and Jan. 16, 1964.
REMARKS.--Water temperature records furnished by the Appalachian Electric Power Company.

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	65	63	--	--	65	62	62	61	61	--	--	60	60	61	61	61	--	--	59	60	59	59	59	--	--	53	58	59	59	59	--	--
November	--	58	60	60	60	60	--	--	58	50	57	59	58	--	--	58	59	59	58	58	54	53	52	52	49	--	48	--	--	48	--	--
December	46	44	44	42	--	--	43	41	41	40	41	--	--	46	44	42	41	40	--	--	38	37	38	--	--	--	--	45	46	46	46	--
January	--	--	--	42	40	41	41	43	--	--	43	42	42	40	39	39	--	36	35	35	35	35	--	--	42	43	43	41	40	--	--	--
February	35	35	35	35	35	--	--	36	41	45	46	47	--	--	44	43	43	43	43	--	--	40	40	41	41	38	--	--	--	--	--	--
March	39	41	42	46	46	--	--	42	42	41	41	41	42	--	43	44	44	46	45	--	--	42	43	44	45	48	--	--	50	49	50	--
April	--	50	--	--	51	--	--	--	56	--	--	57	56	54	55	--	--	--	56	56	--	58	59	--	--	63	60	61	56	--	--	--
May	--	--	62	64	66	68	70	--	--	73	73	71	71	71	--	--	--	--	74	74	--	--	--	76	76	79	78	77	--	--	--	--
June	75	77	75	76	--	--	78	78	79	81	81	--	--	84	80	79	79	76	--	--	76	78	78	77	79	--	--	81	83	82	--	--
July	82	83	--	--	--	82	83	82	82	--	--	83	84	84	84	84	--	--	84	83	83	84	84	--	--	87	86	87	87	86	--	--
August	--	--	--	--	85	83	--	--	--	84	84	84	84	--	--	84	84	86	85	86	--	--	86	86	86	86	87	--	--	82	82	--
September	82	82	82	--	--	--	82	82	82	84	--	--	85	85	85	86	84	--	--	83	84	84	83	82	--	--	78	79	79	78	--	--

KANAWHA RIVER BASIN--Continued

3-1955. ELK RIVER AT SUTTON, W. VA.

LOCATION.--Temperature recorder at gaging station near left bank on downstream side of pier of highway bridge at Sutton, Braxton County, 0.5 mile upstream from Granny Creek, and 2.5 miles downstream from Wolf Creek.
DRAINAGE AREA.--543 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1960 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 69°F Oct. 1; minimum, 34°F Feb. 8, 9.
EXTREMES, 1960-65.--Water temperatures: Maximum, 85°F Aug. 30 and Sept. 1, 1960; minimum, freezing point Feb. 25, 26, 1963.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	69	68	64	65	64	64	64	63	60	60	60	60	61	61	59	60	59	60	58	59	60	61	60	60	60	61	60	59	58	58	58	61
Minimum	68	64	64	63	63	62	61	60	60	60	58	58	58	58	58	58	58	58	58	58	59	59	59	59	58	58	58	58	58	57	57	60
November																																
Maximum	58	58	59	59	58	58	58	57	57	57	56	57	57	55	55	54	54	54	54	54	52	52	50	46	45	44	44	45	45	45	--	53
Minimum	57	57	57	57	57	56	56	56	56	55	55	55	54	54	54	54	53	53	54	51	52	50	46	44	44	42	41	44	45	43	--	52
December																																
Maximum	44	44	43	44	46	47	46	43	41	40	39	40	46	46	44	44	41	38	38	38	36	36	38	39	41	46	47	47	45	44	43	42
Minimum	42	43	41	38	38	46	43	41	40	39	39	39	40	44	42	41	38	37	37	36	35	35	36	38	39	41	46	45	44	43	43	40
January																																
Maximum	44	44	44	44	40	39	40	41	42	44	42	42	41	40	40	38	37	37	36	36	36	36	35	40	43	43	43	43	41	38	36	40
Minimum	43	42	42	40	39	39	39	40	41	42	42	41	40	40	38	37	37	36	36	35	35	35	35	35	40	42	42	41	38	36	36	39
February																																
Maximum	36	36	36	36	36	36	35	35	43	44	47	47	47	47	44	41	39	39	39	40	40	41	40	40	39	38	37	36	--	--	--	40
Minimum	36	35	35	35	35	35	35	34	34	43	44	47	47	44	41	39	39	39	39	39	40	40	38	38	38	37	36	35	--	--	--	38
March																																
Maximum	35	40	43	45	45	44	43	40	40	41	41	40	39	39	39	40	40	42	44	43	41	38	37	42	42	43	43	42	45	48	47	42
Minimum	35	35	40	43	44	43	40	39	39	40	40	39	39	38	39	39	40	40	42	41	38	36	36	37	42	42	42	42	42	45	47	40
April																																
Maximum	47	45	47	47	47	46	48	47	46	48	49	48	49	49	49	50	50	50	50	50	49	49	49	49	50	51	51	51	51	52	--	49
Minimum	45	44	43	43	44	45	44	44	45	45	45	47	48	49	49	49	50	50	50	49	49	49	49	49	49	50	51	51	51	51	--	48
May																																
Maximum	53	53	53	54	53	53	53	54	53	53	54	54	55	55	55	58	59	58	58	58	55	59	58	55	58	60	59	60	59	61	61	56
Minimum	51	51	51	51	51	51	51	51	51	51	52	51	51	51	51	52	52	52	52	52	52	52	52	52	52	53	53	53	52	51	51	52
June																																
Maximum	62	61	56	62	56	57	59	59	58	62	60	61	62	61	56	58	58	59	61	62	62	63	62	55	62	62	64	63	62	55	--	60
Minimum	52	53	54	54	52	52	53	53	53	52	53	53	53	52	52	53	53	53	53	52	53	53	53	54	53	53	53	53	54	54	--	53
July																																
Maximum	63	62	61	62	57	62	57	56	56	55	54	55	56	56	56	57	56	56	62	62	63	63	61	63	61	64	61	63	62	63	62	60
Minimum	54	53	54	54	54	54	53	52	53	53	53	53	53	54	54	54	54	55	55	55	55	55	56	56	57	56	56	56	56	55	55	54
August																																
Maximum	63	58	64	64	65	66	65	63	62	59	65	65	66	64	65	65	65	66	61	65	60	66	62	64	65	66	66	64	64	63	64	64
Minimum	56	56	55	54	56	57	57	58	53	57	57	56	56	57	57	57	57	58	57	57	56	57	58	58	57	57	57	58	55	55	56	57
September																																
Maximum	60	65	66	66	64	65	66	64	65	66	64	60	62	64	66	64	66	65	63	63	62	63	60	59	61	62	63	64	65	66	--	64
Minimum	58	57	56	56	57	58	58	58	58	58	59	59	59	59	58	59	58	58	59	59	59	59	59	59	59	59	60	62	63	64	--	59

KANAWHA RIVER BASIN--Continued

3-1966. ELK RIVER NEAR FRAMETOWN, W. VA.

LOCATION.--Temperature recorder at gaging station, on right bank opposite mouth of Birch River at village of Glendon, 2.2 miles upstream from Strange Creek, and 3.2 miles southwest of Frametown, Braxton County.
DRAINAGE AREA.--752 square miles, including that of Birch River.
RECORDS AVAILABLE.--Water temperatures: November 1960 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 78°F Aug. 17-20; minimum, 34°F Feb. 3-6.
EXTREMES, 1960-65.--Water temperatures: Maximum, 81°F Aug. 10, 1962; minimum, freezing point on several days during winter months most years.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	66	66	66	64	63	62	61	60	58	57	57	57	56	56	56	57	57	58	58	58	57	56	56	56	55	55	56	56	57	57	57	58
Minimum	64	66	64	63	62	60	60	58	57	57	57	56	56	56	56	56	56	57	58	56	56	56	56	55	55	55	55	56	56	57	56	58
November																																
Maximum	56	56	55	55	55	54	54	53	53	53	52	52	53	53	52	52	52	52	52	52	50	46	46	46	45	44	43	41	41	41	--	50
Minimum	56	55	55	55	54	54	53	53	53	52	52	52	52	52	52	52	52	52	52	50	46	46	46	45	44	43	41	40	41	41	--	50
December																																
Maximum	41	40	42	43	43	45	46	45	43	43	41	41	43	44	44	42	42	42	39	37	37	37	37	38	40	41	44	44	44	46	46	42
Minimum	40	40	40	42	40	42	45	43	43	41	41	41	41	43	42	41	42	39	37	37	37	37	37	37	38	40	41	44	44	44	45	41
January																																
Maximum	46	47	47	47	46	44	44	43	44	45	45	45	46	45	42	43	43	39	39	38	38	38	38	39	44	45	44	43	43	40	39	43
Minimum	45	45	46	45	44	44	43	43	43	44	45	45	45	42	42	42	39	38	38	38	37	37	37	38	39	44	43	42	40	38	36	42
February																																
Maximum	36	36	36	34	34	35	35	35	41	43	44	45	45	45	45	44	42	42	39	39	38	38	38	38	38	38	36	36	--	--	--	39
Minimum	35	36	34	34	34	34	35	35	35	41	43	44	45	45	44	42	42	39	39	38	38	38	38	38	38	36	36	36	--	--	--	38
March																																
Maximum	36	36	40	41	41	41	41	41	41	40	39	39	39	39	38	39	39	40	41	41	41	40	39	38	41	41	43	43	43	46	47	40
Minimum	36	36	36	40	41	41	41	40	40	39	39	39	39	38	38	38	39	39	40	41	40	39	38	38	38	41	41	42	43	43	46	40
April																																
Maximum	47	47	47	46	47	48	50	50	50	49	49	49	49	49	49	49	50	50	50	50	49	49	49	49	51	51	51	50	50	50	--	49
Minimum	46	47	46	46	46	47	48	50	49	48	48	49	49	48	49	49	49	49	50	49	48	49	49	49	49	51	50	50	50	50	--	49
May																																
Maximum	52	54	56	56	56	56	56	56	56	57	57	56	56	58	59	62	66	66	66	65	65	68	68	68	67	69	69	69	69	67	68	62
Minimum	50	52	54	54	56	56	56	56	56	56	56	56	56	56	58	59	62	65	65	65	65	65	68	67	66	66	68	68	67	66	66	61
June																																
Maximum	69	70	70	70	70	70	70	70	70	70	71	72	72	72	72	70	70	70	70	71	71	74	74	74	73	74	74	74	75	75	--	72
Minimum	67	69	69	68	68	68	70	69	69	69	70	71	72	72	70	70	70	69	69	70	70	71	73	73	71	71	72	73	74	74	--	70
July																																
Maximum	74	74	74	74	75	75	75	75	73	67	65	62	60	61	63	64	63	61	64	67	69	71	71	72	73	75	75	74	74	73	73	70
Minimum	73	74	74	74	74	74	75	73	57	55	52	57	57	50	51	52	51	59	59	54	57	59	71	71	72	73	74	74	73	73	72	68
August																																
Maximum	72	72	71	71	72	73	74	74	74	74	73	75	75	75	75	75	78	78	78	78	77	75	75	75	75	75	76	76	76	73	72	75
Minimum	72	71	71	71	71	72	73	74	74	72	71	73	74	75	75	75	75	78	78	77	75	75	75	75	75	75	75	76	73	72	72	74
September																																
Maximum	72	71	70	71	71	72	73	73	75	75	75	75	75	75	74	74	75	75	75	76	76	76	74	72	69	66	64	64	65	65	--	72
Minimum	71	70	70	70	71	71	72	73	73	75	75	75	75	74	74	74	74	75	75	75	76	74	72	69	65	64	63	63	64	65	--	71

KANAWHA RIVER BASIN--Continued

3-1968. ELK RIVER AT CLAY, W. VA.

LOCATION.--Temperature recorder at gaging station on right bank at downstream side of pier of highway bridge at Clay, Clay County, 0.9 mile downstream from Buffalo Creek, 2.1 miles downstream from Lower Two Run Creek, and 53.2 miles upstream from mouth.
DRAINAGE AREA.--994 square miles.
RECORDS AVAILABLE.--Water temperatures: November 1960 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 86°F Aug. 15-18; minimum, 34°F Jan. 19-23, and Feb. 6-8.
EXTREMES, 1960-65.--Water temperatures: Maximum, 87°F July 23, 1964; minimum, freezing point on several days in February 1961.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	65	67	67	65	64	60	58	58	57	56	55	56	56	57	56	56	58	59	59	58	56	54	53	52	52	52	53	54	55	56	56	57
Minimum	62	65	65	64	60	58	57	56	56	55	54	54	54	55	56	56	56	58	58	56	53	53	52	50	50	50	51	52	54	55	55	56
November																																
Maximum	56	55	55	53	52	52	52	51	50	49	49	48	51	50	49	50	51	51	51	51	49	45	44	43	44	44	44	44	43	43	--	49
Minimum	54	54	53	52	52	52	50	50	49	48	48	48	49	49	48	48	50	50	51	49	45	44	42	42	43	44	44	43	43	42	--	48
December																																
Maximum	42	39	40	44	45	44	44	44	44	43	42	42	43	44	44	42	40	40	39	37	37	37	37	39	41	42	42	44	44	44	44	42
Minimum	39	38	39	40	42	42	44	44	43	42	42	42	42	43	42	40	40	39	37	37	37	37	37	37	39	41	42	42	44	44	44	41
January																																
Maximum	44	44	44	44	42	41	40	40	41	41	42	41	41	40	39	38	38	36	35	34	35	34	35	38	39	41	41	40	39	38	37	39
Minimum	43	43	44	42	41	40	40	40	40	41	41	41	40	39	38	38	36	35	34	34	34	34	34	35	38	39	40	39	38	37	35	38
February																																
Maximum	35	36	35	35	36	36	34	38	38	43	44	45	45	44	43	42	42	42	41	40	38	38	37	37	37	37	36	36	--	--	--	39
Minimum	35	35	35	35	35	34	34	34	37	37	43	44	44	43	42	42	42	41	40	38	38	37	36	37	37	36	36	36	--	--	--	38
March																																
Maximum	40	40	42	44	44	44	44	44	44	43	42	42	42	42	42	43	43	44	44	44	43	42	42	42	43	44	44	44	46	47	48	43
Minimum	36	40	40	42	44	44	44	44	43	42	42	42	42	42	42	42	42	42	44	42	42	41	42	42	42	43	44	44	44	46	46	42
April																																
Maximum	48	48	48	48	49	51	54	54	53	52	52	52	52	52	50	50	50	52	52	52	52	54	54	54	54	54	54	52	52	54	--	52
Minimum	47	47	46	47	48	49	51	53	52	51	51	52	52	50	50	50	50	50	52	52	52	52	54	54	54	54	52	52	51	51	--	51
May																																
Maximum	56	59	61	62	63	64	65	65	64	64	65	64	65	67	67	69	71	73	71	71	70	75	76	78	78	79	79	76	74	73	74	69
Minimum	53	56	58	60	62	61	63	64	63	64	64	64	62	62	63	65	67	68	68	68	68	68	73	72	74	75	76	74	70	66	66	66
June																																
Maximum	74	76	76	76	75	78	78	78	78	80	80	80	81	81	78	72	71	71	75	76	78	81	82	82	80	80	83	83	83	83	--	78
Minimum	68	71	71	68	70	72	74	74	76	76	76	76	76	73	72	70	68	68	68	70	72	74	76	76	72	73	74	76	78	78	--	73
July																																
Maximum	82	80	80	80	80	82	80	81	82	80	79	78	72	72	72	76	75	73	73	72	77	80	78	82	82	85	82	82	81	80	78	79
Minimum	76	75	77	76	77	76	78	77	78	79	78	72	67	70	70	72	73	72	72	68	70	72	76	76	80	78	78	77	77	74	74	75
August																																
Maximum	78	77	78	77	79	80	83	82	80	80	79	80	81	83	86	86	86	86	84	83	80	82	81	80	80	82	82	82	78	76	76	81
Minimum	75	74	74	70	74	75	76	78	78	75	72	72	74	76	78	80	80	81	80	78	76	76	78	76	77	78	77	78	72	70	70	76
September																																
Maximum	76	76	78	76	76	78	80	80	80	80	80	80	76	78	79	80	80	81	82	82	81	80	79	77	73	70	68	66	66	66	--	77
Minimum	72	70	70	72	72	74	74	75	75	76	76	76	74	74	74	76	76	76	77	77	78	78	77	73	70	67	65	64	64	64	--	73

KANAWHA RIVER BASIN--Continued

3-1970. ELK RIVER AT QUEEN SHOALS, W. VA.

LOCATION.--Temperature recorder at gaging station on right bank, 50 feet upstream from Queen Shoals Creek, 100 feet downstream from highway bridge at Queen Shoals, Kanawha County, and 4 miles upstream from Big Sandy Creek.
DRAINAGE AREA.--1,145 square miles, including that of Queen Shoals Creek.
RECORDS AVAILABLE.--Water temperatures: November 1960 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 82°F Aug. 17-19; minimum, 36°F on several days in January and February.
EXTREMES, 1960-65.--Water temperatures: Maximum, 84°F July 2, 3, 1963 and July 23, 1964; minimum, freezing point on several days in January and February 1963.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen
																			Calcium, magnesium	Noncarbonate					
May 19, 1965.	287		0.0	0.05	0.00						20		18	2.5		0.0	0.01		25	8		84	7.2	3	7.8

KANAWHA RIVER BASIN--Continued

3-1970. ELK RIVER AT QUEEN SHOALS, W. VA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	64	66	66	66	64	62	60	58	57	57	56	55	54	55	56	56	57	58	58	58	57	56	55	54	52	52	52	52	53	54	54	57
Minimum	63	63	66	64	62	60	58	57	57	56	55	54	54	54	55	56	56	57	58	57	56	55	54	52	52	52	52	52	52	53	54	56
November																																
Maximum	54	55	55	55	55	54	54	53	52	51	51	51	52	52	52	52	53	53	53	53	53	50	46	44	44	46	46	46	46	46	--	51
Minimum	54	54	55	55	54	54	53	52	51	51	51	51	51	52	52	52	52	53	53	53	50	46	44	43	43	44	46	46	46	44	--	50
December																																
Maximum	44	43	42	44	47	47	44	44	44	44	44	45	46	46	45	44	43	42	42	40	40	40	40	40	43	44	45	45	45	46	46	44
Minimum	43	42	42	42	44	44	44	44	44	44	44	44	45	44	44	43	41	42	40	40	40	40	40	40	40	43	44	45	45	45	46	43
January																																
Maximum	46	46	46	45	44	43	42	43	44	44	44	44	43	43	41	40	40	39	38	37	36	36	37	40	41	43	44	43	41	40	39	42
Minimum	45	45	45	44	43	42	42	42	43	44	44	43	43	41	40	40	39	38	37	36	36	36	36	37	40	40	43	41	40	39	37	41
February																																
Maximum	37	36	37	37	37	36	36	38	41	44	46	47	47	47	45	44	44	44	44	44	42	41	40	40	40	40	39	39	--	--	--	41
Minimum	36	36	36	37	36	36	36	36	38	40	44	46	47	45	44	44	44	44	44	42	41	40	40	40	40	39	37	37	--	--	--	40
March																																
Maximum	40	41	42	44	44	44	43	43	43	43	43	42	41	42	43	44	44	44	45	45	43	42	44	44	44	44	45	45	46	47	48	44
Minimum	39	40	41	42	44	43	43	43	43	43	42	41	41	41	42	43	44	44	44	43	42	42	42	44	43	44	44	45	45	46	47	43
April																																
Maximum	48	48	48	48	49	51	53	53	53	53	52	52	53	52	51	51	51	52	53	52	52	54	56	56	56	56	55	54	52	54	--	52
Minimum	47	48	48	48	48	49	51	53	53	52	52	52	52	51	51	51	50	50	52	52	52	52	54	56	56	55	54	52	52	52	--	52
May																																
Maximum	56	58	61	63	64	65	66	68	68	68	67	67	66	66	66	67	68	69	70	70	70	71	72	73	75	76	76	76	76	75	74	69
Minimum	54	56	58	61	63	64	65	66	68	67	67	66	66	66	66	66	67	68	69	70	70	70	71	72	73	75	76	76	75	74	73	68
June																																
Maximum	73	74	74	74	73	74	74	75	76	76	77	78	78	78	78	76	75	74	74	74	74	76	77	77	76	76	76	78	79	79	--	76
Minimum	72	73	74	73	73	73	74	74	75	76	76	77	78	78	76	75	74	73	72	73	73	74	76	76	76	76	76	76	78	78	--	75
July																																
Maximum	78	78	78	78	78	78	78	78	78	78	78	78	78	78	77	76	75	75	76	76	76	77	77	78	78	81	80	80	80	79	78	78
Minimum	78	78	78	78	78	78	78	78	78	78	78	78	78	77	75	75	75	75	75	75	76	76	77	77	78	78	80	80	79	78	77	77
August																																
Maximum	77	77	76	76	76	77	78	79	79	78	76	77	78	79	80	81	82	82	82	80	80	78	78	78	78	78	78	78	78	77	76	78
Minimum	77	76	76	75	75	76	77	78	78	76	76	75	75	76	78	79	80	80	80	80	78	78	78	78	78	78	78	78	77	76	76	77
September																																
Maximum	76	75	74	74	74	75	76	76	76	76	76	76	76	75	75	76	76	76	76	77	78	78	78	77	76	72	70	68	67	67	--	75
Minimum	75	74	74	74	74	74	75	76	76	76	76	76	75	75	75	75	76	76	76	76	77	78	77	76	72	70	68	67	67	66	--	74

KANAWHA RIVER BASIN--Continued

3-1980. KANAWHA RIVER AT CHARLESTON, W. VA.

LOCATION.--Temperature recorder at gaging station on left bank at old Lock 6, 1 mile upstream from Davis Creek, 1.5 miles downstream from Twomile Creek, and 3.5 miles downstream from Elk River.
DRAINAGE AREA.--10,419 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1953 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 94°F July 26 and Aug. 17, 18; minimum, 35°F Feb. 5, 8.
EXTREMES, 1953-65.--Water temperatures: Maximum, 95°F Aug. 25, 26, 1959; minimum, 34°F on several days during 1961-63.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	71	67	66	67	67	65	63	62	63	60	63	62	67	66	65	67	68	66	63	60	61	61	61	61	63	61	65	65	65	63	62	64
Minimum	67	66	65	66	65	63	61	60	60	59	59	59	58	60	60	61	61	61	59	58	58	58	56	57	57	57	58	58	59	59	58	60
November																																
Maximum	65	66	64	61	62	63	62	63	62	61	65	61	63	63	66	66	65	65	63	61	61	57	55	56	54	55	53	49	48	50	--	60
Minimum	58	59	58	58	57	58	59	58	58	59	57	56	59	58	58	60	60	61	58	57	56	54	52	50	50	51	47	47	47	49	--	56
December																																
Maximum	50	49	49	49	46	46	47	46	46	46	46	46	46	46	47	47	46	46	46	45	45	45	46	45	46	46	46	46	49	48	49	47
Minimum	47	47	47	46	45	45	46	46	45	44	44	44	45	46	46	46	45	45	44	43	42	43	40	42	44	45	45	46	46	47	48	45
January																																
Maximum	49	48	46	46	45	43	44	46	46	47	44	44	44	44	44	43	43	42	42	42	41	42	44	42	41	43	44	45	45	44	43	44
Minimum	48	46	45	44	43	42	43	42	44	44	44	44	43	44	43	43	42	41	38	38	40	38	38	41	40	41	43	44	44	42	41	42
February																																
Maximum	42	40	41	40	41	41	42	39	39	44	46	47	48	48	47	47	47	46	46	47	46	45	46	48	47	--	--	--	--	--	--	44
Minimum	38	38	37	36	35	36	36	35	36	39	44	46	47	47	47	45	46	45	45	45	45	43	44	43	41	--	--	--	--	--	--	42
March																																
Maximum	41	42	43	46	47	47	46	45	46	46	47	46	47	47	48	49	50	49	49	48	48	47	47	47	48	47	47	47	49	50	50	47
Minimum	40	40	42	43	46	46	45	45	45	45	44	45	45	46	46	47	47	48	48	47	47	46	46	47	46	46	47	47	47	49	50	46
April																																
Maximum	51	52	52	52	52	53	55	57	57	57	57	56	57	57	57	57	57	56	57	58	58	60	61	63	64	64	63	62	60	59	--	57
Minimum	50	50	51	51	51	52	53	54	56	57	56	55	56	57	57	57	55	55	56	57	58	58	60	61	63	63	62	60	59	59	--	56
May																																
Maximum	61	63	63	66	67	67	70	71	72	73	73	73	73	73	74	75	77	77	76	77	77	79	78	79	80	81	80	80	80	79	82	74
Minimum	59	60	61	63	65	66	67	69	71	72	72	72	71	71	72	72	72	75	72	74	74	77	77	77	77	78	79	79	77	77	77	72
June																																
Maximum	80	82	81	79	82	84	83	87	85	86	86	89	89	85	84	83	84	83	83	83	86	85	88	88	83	84	90	91	92	89	--	85
Minimum	76	76	76	76	76	78	78	80	80	81	82	82	83	81	80	80	80	79	78	78	81	81	85	79	81	80	83	85	85	86	--	80
July																																
Maximum	87	87	89	89	89	89	88	87	88	88	87	86	87	87	88	88	88	89	89	88	89	89	92	93	93	94	92	92	92	92	92	89
Minimum	83	85	85	84	85	85	84	83	84	83	82	82	83	85	84	83	83	82	83	84	85	84	86	86	87	86	87	88	86	86	87	85
August																																
Maximum	88	90	90	91	91	91	92	90	92	90	89	89	90	87	92	93	94	94	93	89	88	92	90	90	90	93	92	90	88	88	89	90
Minimum	83	87	85	85	85	86	86	85	87	83	86	83	86	84	85	89	88	88	85	86	84	85	88	86	87	89	88	87	85	85	83	86
September																																
Maximum	89	87	88	88	88	88	90	91	91	92	89	87	88	89	91	91	91	92	93	91	93	91	89	89	84	85	82	84	83	81	--	88
Minimum	84	82	82	82	83	83	83	86	86	87	85	84	83	84	84	86	84	89	87	86	88	86	84	82	81	80	78	78	78	76	--	83

KANAWHA RIVER BASIN--Continued

3-2013. KANAWHA RIVER AT WINFIELD DAM, AT WINFIELD, W. VA.

LOCATION.--On left bank at intake line to Ohio River Valley Water Sanitation Commission (ORSANCO) monitor at Kanawha Valley Power Company intake at Winfield Dam, Putnam County, 1 mile downstream from Winfield Toll bridge.
DRAINAGE AREA.--11,809 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1965.
Water temperatures: October 1956 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 1,020 micromhos Sept. 21; minimum daily, 98 micromhos Apr. 13.
Water temperatures: Maximum, 88°F July 15, 26, 27; minimum, 40°F Feb. 6, 7, 9, 28, Mar. 1.
EXTREMES, 1956-65.--Specific conductance: Maximum daily, 2,700 micromhos Apr. 21, 1961; minimum daily, 77 micromhos Jan. 31, 1957.
Water temperatures: Maximum, 91°F July 24, 1964; minimum, freezing point Feb. 14, 1958, Mar. 12, 1960.
REMARKS.--Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month; (2) minimum daily specific conductance for each month, and (3) maximum daily specific conductance for each 10-day period.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
																			Calcium, magnesium	Noncarbonate					
Oct. 1, 1964						--	--				--	--	32	--	--	--	0.27	--	--	--		348	6.6		0.1
Oct. 4						15	3.4				15	0	30	18	0.0	3.2	--	93	52	40		164	6.3		--
Oct. 19						43	5.1				50	0	54	84	.1	.1	--	288	128	87		482	6.7		--
Oct. 31						--	--				--	--	45	--	--	--	.34	--	--	--		345	7.2		.1
Nov. 10						--	--				--	--	46	--	--	--	.22	--	--	--		548	7.2		.1
Nov. 20						--	--				--	--	57	--	--	--	.26	--	--	--		617	6.8		.2
Nov. 22						60	10				70	0	56	120	.0	.2	--	362	191	133		634	7.2		--
Nov. 30						17	5.2				37	0	23	15	.0	2.8	--	105	64	34		175	6.8		--
Dec. 4						--	--				--	--	26	--	--	--	.24	--	--	--		244	7.3		.1
Dec. 7						13	3.8				17	0	25	12	.0	2.6	--	82	48	34		142	6.9		--
Dec. 13						--	--				--	--	35	--	--	--	.19	--	--	--		241	6.3		.1
Dec. 26						24	4.9				32	0	38	32	.0	1.6	--	143	80	54		260	7.1		--
Jan. 2, 1965						--	--				26	0	31	--	--	--	.14	--	--	--		188	6.5		.0
Jan. 5						9.2	3.6				12	0	24	6.0	.1	3.8	--	60	38	28		109	6.7		--
Jan. 20						--	--				20	0	42	--	--	--	.10	--	--	--		209	6.4		.4
Jan. 24						22	5.9				30	0	41	27	.1	5.2	--	154	79	54		252	6.6		--
Feb. 8						27	4.6				26	0	43	36	.0	7.7	--	180	86	65		282	6.7		--
Feb. 10						13	2.6				26	0	15	10	.0	4.5	--	75	43	22		122	6.4		--
Feb. 19						--	--				--	--	30	--	--	--	.24	--	--	--		239	7.1		.1
Feb. 26						--	--				--	--	43	--	--	--	.30	--	--	--		282	6.4		.0

KANAWHA RIVER BASIN--Continued

3-2013. KANAWHA RIVER AT WINFIELD DAM, AT WINFIELD, W. VA.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Mar. 10, 1965						--	--				--	--	28	--	--	--	0.11	--	--	--		196	6.6		0.0
Mar. 18......						25	5.8				29	0	41	34	0.0	4.9	--	181	86	62		266	6.6		--
Mar. 24......						--	--				--	--	27	--	--	--	.16	--	--	--		185	7.4		.0
Mar. 27......						10	2.9				16	0	20	5.0	.1	4.1	--	71	37	24		99	6.4		--
Apr. 7.......						19	5.4				28	0	36	22	.1	3.8	--	134	69	46		207	6.5		--
Apr. 11......						--	--				--	--	29	--	--	--	.14	--	--	--		145	6.5		.0
Apr. 13......						8.4	3.7				12	0	32	4.2	.1	1.0	--	72	36	26		98	6.5		--
Apr. 26......						--	--				--	--	39	--	--	--	.18	--	--	--		192	6.5		.0
May 1........						14	3.9				20	0	28	16	.1	3.9	--	98	51	34		157	6.8		--
May 10.......						--	--				--	--	39	--	--	--	.11	--	--	--		272	7.4		.1
May 20.......						--	--				--	--	40	--	--	--	.14	--	--	--		309	6.5		.1
May 22.......						35	7.3				26	0	51	66	.2	6.1	--	254	118	96		404	7.2		--
June 1.......						32	4.4				40	0	45	40	.2	5.3	--	180	98	65		313	6.9		--
June 8.......						--	--				--	--	51	--	--	--	.21	--	--	--		479	6.6		.1
June 17......						--	--				--	--	60	--	--	--	.24	--	--	--		541	6.9		.1
June 30......						49	7.8				48	0	59	90	.3	5.4	--	330	154	115		555	6.3		--
July 7.......						56	8.5				48	0	65	119	.4	15	--	434	175	135		650	6.7		--
July 12......						--	--				--	--	64	--	--	--	35	--	--	--		530	6.4		.1
July 18......						30	7.8				50	0	47	42	.2	6.7	--	180	107	66		340	6.6		--
July 31......						--	--				--	--	58	--	--	--	26	--	--	--		517	7.3		.1
Aug. 8.......						--	--				--	--	78	--	--	--	40	--	--	--		732	7.2		.1
Aug. 19......						60	13				76	0	68	144	.4	.5	--	417	203	141		763	6.5		--
Aug. 25......						39	9.7				43	0	76	76	.4	14	--	287	138	103		509	6.6		--
Aug. 29......						--	--				--	--	81	--	--	--	.39	--	--	--		778	7.3		.1
Sept. 5......						--	--				--	--	83	--	--	--	.68	--	--	--		776	6.2		.1
Sept. 20.....						--	--				--	--	117	--	--	--	.49	--	--	--		997	7.1		.2
Sept. 21.....						83	11				80	0	108	206	.4	.2	--	584	252	187		1020	7.8		--
Sept. 29.....						55	11				46	0	78	108	.3	17	--	389	182	145		626	7.5		--

KANAWHA RIVER BASIN--Continued

3-2013. KANAWHA RIVER AT WINFIELD DAM, AT WINFIELD, W. VA.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement at 0800)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	348	345	192	171	186	185	137	157	313	567	535	689
2......	176	--	218	188	190	189	153	172	335	560	604	692
3......	175	447	233	145	210	191	165	183	329	528	590	745
4......	164	465	244	116	230	180	179	204	342	568	589	760
5......	198	439	241	108	238	154	181	203	374	616	619	776
6......	225	438	185	130	254	156	189	219	393	638	661	754
7......	218	408	142	142	276	152	207	240	461	650	728	770
8......	226	422	144	156	282	161	197	248	479	601	732	754
9......	217	516	157	168	136	170	176	248	449	557	689	730
10......	225	548	192	--	122	196	176	272	432	562	664	726
11......	248	571	--	128	122	187	145	243	443	526	631	730
12......	255	569	196	128	140	191	111	230	443	530	653	713
13......	292	485	241	127	143	193	98	238	467	514	668	751
14......	318	475	176	133	165	203	107	250	495	468	688	780
15......	323	505	158	163	163	211	112	243	497	471	728	815
16......	315	541	152	160	178	217	133	240	519	399	728	828
17......	326	530	159	176	206	231	134	262	541	353	726	845
18......	364	532	198	182	218	266	125	228	488	340	750	843
19......	482	610	181	194	239	212	134	222	511	353	763	903
20......	229	617	189	209	222	167	140	309	499	357	737	997
21......	214	576	219	229	230	159	150	326	517	371	667	1020
22......	196	634	225	247	232	160	144	404	495	412	590	966
23......	217	550	251	249	258	172	150	378	508	410	525	938
24......	222	564	246	252	260	185	170	348	475	409	520	855
25......	240	459	244	197	268	164	178	299	463	421	509	780
26......	258	410	260	119	282	126	192	299	449	427	519	723
27......	253	420	254	127	210	99	143	323	472	454	607	659
28......	283	215	221	123	183	101	131	287	491	470	731	571
29......	272	188	162	139	--	110	134	294	519	501	778	626
30......	302	175	168	151	--	123	142	302	555	502	734	632
31......	345	--	174	183	--	133	--	302	--	517	689	--
Average	262	470	200	164	208	172	151	263	458	485	656	782

KANAWHA RIVER BASIN--Continued

3-2013. KANAWHA RIVER AT WINFIELD DAM, AT WINFIELD, W. VA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at 0800)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	75	69	69	69	70	66	67	67	66	63	64	65	65	64	64	63	64	64	67	65	63	62	62	61	61	61	62	62	62	62	63	65
November	63	64	65	65	65	65	63	62	63	62	62	61	61	61	61	61	61	62	62	62	61	61	60	58	56	55	53	49	49	48	--	60
December	50	48	48	49	49	47	47	48	47	47	47	47	48	48	49	48	48	47	46	45	44	43	43	43	44	46	47	47	47	48	50	47
January	50	49	47	47	46	47	47	47	48	47	46	46	46	46	41	46	45	45	45	41	41	41	41	41	42	44	45	44	45	47	45	45
February	45	44	43	42	41	40	40	43	40	45	45	46	47	46	47	49	50	50	50	46	46	46	46	45	45	43	41	40	--	--	--	45
March	40	41	44	46	47	47	47	47	47	48	47	48	48	48	48	48	48	50	50	49	48	47	48	48	49	47	49	49	49	49	51	47
April	52	53	52	53	55	55	55	58	59	60	60	58	59	59	60	56	58	57	59	58	59	61	62	63	64	65	64	62	62	60	--	59
May	60	61	64	66	67	70	71	72	74	75	76	77	75	76	75	74	75	75	76	76	76	77	78	79	80	81	82	81	80	80	80	74
June	80	80	80	79	80	80	81	80	80	82	83	83	83	82	83	83	82	82	81	81	81	82	82	83	82	82	82	82	82	84	--	82
July	84	83	84	83	84	85	85	85	87	86	85	85	85	86	88	87	86	86	86	85	84	85	86	86	86	88	88	87	87	87	87	86
August	85	84	84	85	84	84	85	84	84	85	84	83	83	84	85	86	85	85	86	87	87	86	86	86	86	86	86	86	83	82	82	85
September	84	83	83	84	84	82	81	81	82	81	82	82	82	82	82	82	82	82	82	82	84	83	83	83	83	82	82	78	78	78	--	82

RACCOON CREEK BASIN

3-2020. RACCOON CREEK AT ADAMSVILLE, OHIO

LOCATION.--At gaging station at bridge on U.S. Highway 35 in Adamsville, Gallia County, 1.3 miles downstream from Indian Creek.
DRAINAGE AREA.--585 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1951 to September 1954, October 1964 to September 1965.
Water temperatures: October 1951 to September 1954, October 1964 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 2,930 micromhos Nov. 20; minimum daily, 136 micromhos Apr. 11.
Water temperatures: Maximum, 78°F Aug. 16; minimum, freezing point Jan. 17, 31.
EXTREMES, 1951-54, 1964-65.--Specific conductance: Maximum daily, 2,930 micromhos Nov. 20, 1964; minimum daily, 115 micromhos Mar. 23, 1952.
Water temperatures: Maximum, 84°F June 16, 1952; minimum, freezing point Dec. 19, 1951, Jan. 13, 1954, Jan. 17, 31, 1965.
REMARKS.--Sample for iron and manganese filtered clear when collected.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Potential free acidity (H^{+1})	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 1, 1964A..	7.6			0.41	0.22					26	73	170	0.6	0.9	402	124	103	--	781	6.5	
Oct. 4.........	7									10	94	130	.2	1.1	376	123	114	--	672	6.6	
Oct. 22........	1.7									7	101	600	.2	1.2	1180	238	233	--	2100	6.4	
Oct. 1-31......	2.8									15	97	300	.2	1.2	688	166	154	--	1200	6.8	
Nov. 20........	19									21	104	880	.2	1.7	1780	336	319	--	2930	5.5	
Nov. 29........	34									1	191	35	.3	.4	340	174	173	0.3	548	4.6	
Nov. 1-18, 20-24, 29-30.	8.7									15	120	350	.2	1.2	744	205	193	--	1370	6.8	
Dec. 12........	1030									2	88	10	.2	2.3	158	87	86	.1	265	4.8	
Dec. 23........	83									0	321	114	.5	1.2	612	270	270	2.1	1040	3.7	
Dec. 1-31......	298									0	256	57	.4	.7	440	209	209	1.4	726	4.0	
Jan. 1, 1965...	434									0	228	106	.3	1.0	494	213	213	1.4	842	3.9	
Jan. 2.........	1520									1	100	13	.1	1.4	140	80	80	.1	265	4.9	
Jan. 1-31......	532									0	170	42	.2	.7	324	157	157	.8	515	4.3	
Feb. 6.........	90									0	199	60	.3	2.2	398	189	189	1.1	640	4.2	
Feb. 26........	1480									2	89	18	.1	1.2	180	90	88	.3	293	4.9	
Feb. 1-28......	764									0	142	32	.2	1.4	266	131	131	.8	448	4.5	
Mar. 16........	406									0	154	30	.2	.7	281	124	124	.6	463	4.3	
Mar. 17........	866									2	41	14	.1	3.4	146	74	72	.0	223	5.8	
Mar. 1-31......	1245									0	116	19	.2	1.0	219	102	102	.5	337	4.4	
Apr. 5.........	634									0	130	23	.2	.9	237	113	113	.6	404	4.1	
Apr. 11........	3780									1	60	7.5	.0	1.7	88	46	45	.0	136	5.7	
Apr. 1-9, 11-30.	1648									0	112	15	.2	.8	187	94	94	.4	313	4.4	

A Includes 2.6 parts per million dissolved oxygen (27 percent saturation).

RACCOON CREEK BASIN--Coutinued

3-2020. RACCOON CREEK AT ADAMSVILLE, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Contiuued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$ Calcium, magnesium	Hardness as $CaCO_3$ Noncarbonate	Potential free acidity (H^{+1})	Specific conductance (micromhos at 25°C)	pH	Color
May 1, 1965....	742									1	115	18	0.0	0.7	204	102	101	0.4	338	4.7	
May 17.........	126									0	217	58	.0	.3	420	181	181	.6	655	4.3	
May 1-31.......	235									2	172	36	.0	.6	313	141	140	.6	503	4.6	
June 3.........	227									2	153	49	.2	.6	292	152	151	.2	512	4.7	
June 24........	26									0	237	108	.2	.3	538	206	206	.9	669	4.0	
June 1-30......	58.2									0	216	76	.2	.8	449	189	189	.8	714	4.2	
July 17........	32									0	221	122	.2	.4	554	216	216	B.4	866	4.5	
July 24........	156									3	101	35	.0	2.4	236	110	106	B.1	372	5.4	
July 1-17, 19-20, 22-31.	61.8									0	173	66	.1	1.1	363	172	172	B.4	620	4.2	
Aug. 23........	39									2	148	48	.3	.8	292	142	141	B.7	509	4.7	
Aug. 25........	30									0	403	110	.6	.2	674	300	300	B3.0	1210	3.3	
Aug. 1-31......	27.1									0	238	85	.4	.5	482	210	210	B1.3	794	4.2	
Sept. 1........	235									2	110	26	.0	.6	238	100	100	B.3	350	4.9	
Sept. 10.......	51									0	360	250	.4	2.2	912	342	342	B2.4	1460	3.6	
Sept. 1-30.....	389									0	238	70	.2	2.3	466	198	198	B1.4	728	4.0	

B Total acidity as H^{+1}.

RACCOON CREEK BASIN--Continued

3-2020. RACCOON CREEK AT ADAMSVILLE, OHIO--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement between 1300 and 1700)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	--	--	585	842	638	333	366	335	681	636	612	350
2......	852	1560	644	265	604	367	339	372	636	690	618	791
3......	894	1570	676	389	614	336	355	379	512	694	602	700
4......	672	1440	593	392	626	356	368	423	541	709	686	574
5......	672	1480	753	470	638	333	404	435	579	761	--	950
6......	750	1410	--	483	640	349	374	--	621	622	696	903
7......	753	--	644	458	433	365	336	459	629	717	--	1020
8......	807	--	840	--	298	359	345	--	660	661	690	1330
9......	1010	1330	878	352	405	--	279	452	642	695	760	1380
10......	763	1220	813	356	352	368	--	476	727	467	628	1460
11......	827	1340	818	412	330	388	136	498	526	539	710	765
12......	877	1680	265	462	316	409	199	521	602	623	676	468
13......	868	1680	490	460	308	418	239	--	848	628	691	462
14......	--	1680	571	469	321	441	249	--	859	662	692	353
15......	877	1150	653	522	359	461	258	560	781	669	682	370
16......	--	1800	724	533	381	463	261	582	805	638	776	440
17......	903	1470	--	546	399	223	313	655	--	866	--	483
18......	--	1040	758	550	414	295	342	550	706	--	756	513
19......	1100	--	826	565	437	--	256	549	788	643	--	--
20......	1380	2930	824	568	459	330	308	510	853	656	597	586
21......	1680	1540	889	589	471	333	313	505	806	--	838	651
22......	2100	1070	918	599	499	321	--	--	878	721	908	691
23......	2100	829	1040	--	494	336	359	--	857	468	509	735
24......	1900	876	--	555	511	316	362	513	889	372	1010	584
25......	1820	--	818	487	--	316	373	--	850	416	1210	643
26......	--	--	909	522	293	267	375	534	844	612	995	684
27......	1650	--	654	607	405	288	355	525	832	596	--	667
28......	1730	--	579	652	316	290	295	--	826	561	1030	712
29......	1930	548	599	682	--	284	324	609	773	526	912	732
30......	--	574	742	--	--	305	295	591	607	594	933	752
31......	--	--	864	692	--	316	--	567	--	606	952	--
Average	1200	--	727	517	591	343	313	--	729	622	772	715

RACCOON CREEK BASIN--Continued

3-2020. RACCOON CREEK AT ADAMSVILLE, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 1300 and 1700)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	63	63	62	60	57	55	53	53	53	51	52	49	53	--	52	--	52	--	50	50	51	51	50	49	48	--	50	52	50	--	--	53
November	--	52	52	51	51	50	--	--	48	48	49	50	51	51	52	52	52	51	--	48	42	37	38	40	--	--	--	--	40	38	--	--
December	35	36	--	42	43	--	44	40	40	39	40	42	43	39	39	38	--	39	38	37	37	37	38	--	42	45	44	42	43	40	42	40
January	42	45	44	41	40	40	39	--	40	42	40	38	38	36	35	33	32	35	34	34	35	35	--	55	40	40	38	36	33	--	32	38
February	34	33	33	34	34	34	34	34	35	37	36	41	44	40	36	34	35	35	36	36	36	35	35	35	--	34	37	38	--	--	--	36
March	40	42	44	45	44	42	41	41	--	42	39	40	42	42	41	43	47	46	--	44	44	42	42	42	42	42	42	42	47	47	46	43
April	47	47	46	46	47	52	54	54	56	--	57	56	55	55	47	52	52	55	55	55	60	--	60	62	63	62	57	56	56	60	--	54
May	63	63	65	65	65	--	66	--	70	70	70	67	--	--	70	68	69	70	70	68	68	--	--	70	--	74	73	--	70	68	68	--
June	69	70	68	68	72	73	73	69	70	72	73	73	73	70	68	68	--	68	69	70	70	71	77	73	72	71	72	73	73	73	--	71
July	73	73	73	75	75	74	74	76	77	74	74	74	74	74	75	75	74	--	74	74	--	73	74	74	75	73	74	74	74	73	72	74
August	71	71	71	70	--	70	--	70	73	73	72	72	71	73	77	78	--	76	--	75	71	72	71	72	73	72	--	71	71	69	69	72
September	68	66	67	67	67	68	68	70	72	71	71	72	72	68	68	68	68	68	--	71	70	71	70	69	65	61	61	62	62	60	--	68

OHIO RIVER MAIN STEM

3-2022. OHIO RIVER NEAR HUNTINGTON, W. VA.

LOCATION.--At intake line to Ohio River Valley Water Sanitation Commission (ORSANCO) monitor at the Huntington filtration plant at 40th Street and River Road, Cabell County, 0.5 mile upstream from Guyandotte River, and 6.7 miles upstream from gaging station.
DRAINAGE AREA.--54,200 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1963 to September 1965.
Water temperatures: July to September 1963, unpublished; October 1963 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 942 micromhos Sept. 14, 16; minimum daily, 204 micromhos Apr. 14.
Water temperatures: Maximum, 82°F July 26, 27, 29, Aug. 16-18; minimum daily, 37°F Jan. 3, Feb. 2.
EXTREMES, 1963-65.--Specific conductance: Maximum daily, 968 micromhos Nov. 17, 1963; minimum daily, 190 micromhos Mar. 10, 1964.
Water temperatures: Maximum, 86°F July 28, 1964; minimum, 34°F Dec. 30, 1963, Jan. 19, 1964.
REMARKS.--Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month; (2) minimum daily specific conductance for each month, and (3) maximum daily specific conductance for each 10 day period. Records of discharge are given for Ohio River at Huntington.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Oct. 2, 1964..	29200					60	12				40	0	120	96	0.3	7.4	--	400	199	166		651	6.7		--
Oct. 8........	15400					25	5.4				22	0	61	28	.3	3.0	--	154	84	66		283	7.1		--
Oct. 20.......	21400					--	--				--	--	140	--	--	--	0.10	--	--	--		574	7.1		0.1
Oct. 21.......	17400					--	--				--	--	131	--	--	--	.09	--	--	--		543	6.7		.1
Nov. 7........	15300					42	9.4				39	0	109	48	.4	5.6	--	310	144	112		476	7.2		--
Nov. 10.......	11500					--	--				--	--	148	--	--	--	.25	--	--	--		605	7.2		.1
Nov. 19.......	15700					--	--				--	--	168	--	--	--	.15	--	--	--		751	7.3		.1
Nov. 26.......	40600					82	14				44	0	217	114	.8	5.7	--	579	262	226		894	7.3		--
Dec. 5........	86000					55	10				24	0	154	43	.6	9.0	--	346	178	159		540	7.0		--
Dec. 11.......	34900					--	--				--	--	126	--	--	--	.34	--	--	--		459	7.4		.2
Dec. 23.......	43900					27	6.7				18	0	71	23	.2	3.9	--	166	95	80		283	6.9		--
Dec. 29.......	155000					--	--				--	--	80	--	--	--	.16	--	--	--		326	6.6		.1
Jan. 1, 1965..	123000					31	8.4				29	0	85	23	.6	2.1	--	198	112	88		320	6.8		--
Jan. 5........	179000					19	5.8				21	0	56	15	.1	3.4	--	131	72	54		210	6.6		--
Jan. 18.......	42700					--	--				--	--	61	--	--	--	.05	--	--	--		234	6.7		.0
Jan. 25.......	137000					--	--				--	--	87	--	--	--	.04	--	--	--		317	7.1		.0
Feb. 9........	182000					--	--				--	--	66	--	--	--	.13	--	--	--		294	7.0		.1
Feb. 10.......	204000					18	8.2				29	0	54	16	.0	4.1	--	129	78	54		229	7.0		--
Feb. 12.......	215000					--	--				--	--	80	--	--	--	.11	--	--	--		303	6.4		.0
Feb. 25.......	100000					28	8.8				26	0	70	32	.1	4.3	--	183	106	84		311	7.1		--

OHIO RIVER MAIN STEM--Continued

3-2022. OHIO RIVER NEAR HUNTINGTON, W. VA.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Alu-mi-num (Al)	Iron (Fe)	Man-ga-nese (Mn)	Cal-cium (Ca)	Mag-ne-sium (Mg)	Sodium (Na)	Po-tas-sium (K)	Lith-ium (Li)	Bi-car-bon-ate (HCO_3)	Car-bon-ate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluo-ride (F)	Ni-trate (NO_3)	Phos-phor-us as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Cal-cium, mag-nesium	Hardness as $CaCO_3$: Non-car-bon-ate	To-tal acid-ity as H^{+1}	Specific conduct-ance (micro-mhos at 25°C)	pH	Col-or	Deter-gent (MBAS)
Mar. 9, 1965..	160000					32	9.4				36	0	84	20	0.2	4.5	--	220	119	89		326	6.6		--
Mar. 22.......	120000					28	8.3				30	0	70	20	.1	3.1	--	181	104	80		285	7.4		--
Apr. 14.......	227000					18	6.7				26	0	49	11	.2	2.6	--	140	72	51		204	6.6		--
Apr. 28.......	192000					27	7.6				30	0	64	23	.2	2.7	--	177	98	74		279	6.9		--
May 5.........	54000					23	8.6				24	0	72	18	.3	3.3	--	169	93	74		268	7.0		--
May 10........	65800					--	--				--	--	89	--	--	--	0.13	--	--	--		337	7.2		0.0
May 18........	29100					--	--				--	--	92	--	--	--	.24	--	--	--		347	7.1		.0
May 27........	27100					33	11				35	0	84	40	.4	3.8	--	241	128	99		386	7.7		--
June 1........	17300					40	8.3				38	0	89	36	.2	3.0	--	228	134	103		388	7.6		--
June 9........	17300					--	--				--	--	115	--	--	--	.27	--	--	--		492	--		.1
June 11.......	17300					--	--				--	--	120	--	--	--	.22	--	--	--		510	--		.0
June 30.......	15400					52	12				40	0	126	58	.4	5.4	--	324	179	146		548	7.6		--
July 9........	11700					--	--				--	--	126	--	--	--	.14	--	--	--		587	7.2		.1
July 20.......	9760					56	12				40	0	121	88	.5	6.2	--	362	189	156		614	7.3		--
July 21.......	19300					--	--				--	--	122	--	--	--	.21	--	--	--		611	7.0		.1
July 29.......	13400					49	12				48	0	110	68	.5	4.9	--	312	172	132		537	7.3		--
Aug. 6........	15000					--	--				--	--	151	--	--	--	.10	--	--	--		649	7.3		.1
Aug. 9........	13400					46	13				44	0	120	74	.5	5.4	--	333	169	133		576	7.4		--
Aug. 19.......	11500					--	--				--	--	168	--	--	--	.12	--	--	--		791	7.4		.1
Aug. 30.......	7620					67	16				38	0	165	120	.7	7.9	--	497	233	202		803	7.2		--
Sept. 8.......	11700					--	--				--	--	228	--	--	--	.08	--	--	--		893	7.2		.1
Sept. 14......	15300					75	20				24	0	240	116	.6	9.4	--	594	269	250		942	6.9		--
Sept. 21......	13500					--	--				--	--	238	--	--	--	.13	--	--	--		923	7.3		.1
Sept. 28......	7840					64	17				29	0	186	92	.6	10	--	466	230	206		755	7.1		--

OHIO RIVER MAIN STEM--Continued

3-2022. OHIO RIVER NEAR HUNTINGTON, W. VA.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement at 0800)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	566	--	508	320	272	--	--	--	388	550	--	819
2......	651	544	508	283	272	304	--	--	401	550	607	790
3......	--	545	492	240	--	315	--	278	--	556	619	797
4......	649	559	499	211	--	309	--	272	--	--	630	856
5......	503	573	540	210	--	302	--	268	410	565	640	--
6......	525	601	530	244	--	290	--	--	--	570	649	863
7......	323	476	525	269	--	--	--	298	434	--	640	863
8......	283	--	455	--	291	312	--	314	456	585	--	893
9......	371	556	428	263	294	326	--	--	492	587	576	882
10......	--	605	450	--	229	--	--	337	477	578	592	893
11......	--	611	459	--	245	--	--	347	510	--	626	916
12......	351	--	444	223	303	--	225	334	477	590	646	--
13......	394	590		226	301	--	228	343	--	599	660	935
14......	454	611	370	--	274	--	204	331	--	591	667	942
15......	458	633	376	--	--	--	211	--	487	601	--	930
16......	502	646	342	233	--	--	237	--	490	611	688	942
17......	--	669	358	--	248	--	242	337	483	607	719	--
18......	--	717	338	234	--	--	--	347	499	--	762	906
19......	519	751	304	226	--	--	235	337	503	603	791	--
20......	574	731		228	276	--	228	343	--	614	742	923
21......	543	782		245	--	--	--	--	517	611	714	923
22......	432	--	297	267	--	285	--	350	513	599	--	897
23......	374	854	283	267	296	294	--	347	515	568	716	--
24......	435	825	285	--	--	307	--	353	512	568	757	844
25......	438	838	290	317	311	309	--	357	--	--	774	834
26......	488	894	294	279	--	266	--	370	536	568	784	--
27......	527	887		294	296	--	--	386	--	589	784	801
28......	519	739	304	--	--	--	279	380	535	566	772	755
29......	478	--	326	275	--	--	217	371	540	537	--	768
30......	468	592	299	265	--	--	--	--	548	548	803	788
31......	496	--	297	--	--	--	--	374	--	582	800	--
Average	473	673	392	--	--	--	--	--	--	580	698	865

OHIO RIVER MAIN STEM--Continued

3-2022. OHIO RIVER NEAR HUNTINGTON, W. VA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at 0800)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	73	72	--	73	72	71	68	66	65	--	--	66	65	66	64	63	--	--	62	60	63	63	60	60	56	61	62	62	63	61	61	65
November	--	62	62	63	60	60	60	--	59	60	60	--	60	60	58	60	60	59	58	58	54	--	54	54	54	53	54	53	--	55	--	58
December	48	47	48	50	49	46	46	46	46	45	47	--	--	46	--	45	45	42	42	--	--	42	43	44	44	44	--	44	44	44	47	45
January	46	48	37	44	45	47	43	--	44	--	--	45	43	--	--	--	--	--	44	40	39	39	41	--	--	40	40	--	38	38	--	--
February	38	37	--	--	--	--	--	40	40	40	--	43	39	38	--	--	--	--	--	41	--	--	40	--	38	--	39	--	--	--	--	--
March	--	42	42	43	43	42	--	43	42	--	--	--	--	--	--	--	--	--	--	--	--	42	45	45	42	42	--	--	--	--	--	--
April	--	--	--	--	--	--	--	--	--	--	--	56	57	55	53	53	53	--	53	53	--	--	--	--	--	--	--	54	56	--	--	--
May	--	--	58	58	61	--	61	63	--	66	66	66	66	68	69	--	69	70	70	70	--	72	66	70	72	73	74	74	72	--	75	--
June	75	74	--	--	74	--	75	75	75	76	76	76	--	--	76	76	77	77	76	--	77	77	78	78	--	77	--	78	79	79	--	--
July	78	78	78	--	78	77	--	79	80	79	--	79	80	81	81	81	79	--	81	80	79	81	81	81	--	82	82	81	82	81	81	80
August	--	81	78	78	78	79	81	--	79	79	79	80	79	79	--	82	82	82	81	80	79	--	78	79	79	80	80	80	--	79	77	80
September	76	75	77	77	--	77	77	74	77	77	77	--	76	77	78	78	--	78	--	78	79	78	--	78	75	--	73	73	74	73	--	76

BIG SANDY RIVER BASIN

3-2093. RUSSELL FORK AT ELKHORN CITY, KY.

LOCATION.--Temperature recorder at gaging station on left bank, 10 feet downstream from steel highway bridge on State Highway 80, at Elkhorn City, Pike County, and 0.9 mile upstream from Elkhorn Creek.
DRAINAGE AREA.--554 square miles.
RECORDS AVAILABLE.--Water temperatures: July 1961 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 80°F Aug. 18; minimum, not determined, occurred during period of no water-temperature record.
EXTREMES, 1961-65.--Water temperatures: Maximum, 82°F Aug. 19-21, Sept. 3, 1962; minimum, freezing point Jan. 9, 22, 1962, Jan. 11-13, 1963.
REMARKS.--Some diversion from gage pool for municipal water supply of Elkhorn City. Thermograph was defective for much of the year. Flow regulated by John W. Flannagan Reservoir since October 1963 (regulation negligible prior to March 1965).

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Potential free acidity (H^+)	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen: Parts per million	Dissolved oxygen: Percent saturation
May 20, 1965.	900		3.1	0.06	0.01						26	0	30	1.0		0.2	0.02		38	16	0.0	120	6.9	5	7.8	85

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
January																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	37	39	41	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	36	37	39	--
February																																
Maximum	41	41	43	42	42	41	39	38	37	37	36	36	36	37	39	39	38	38	37	38	38	39	40	38	40	41	41	39	--	--	--	39
Minimum	41	41	41	41	41	39	38	37	37	36	36	36	36	36	37	38	38	37	37	37	37	37	38	37	37	40	39	37	--	--	--	38
March																																
Maximum	37	36	36	36	37	38	38	38	38	38	38	38	38	37	37	37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	37	36	36	36	36	37	38	38	38	38	37	37	37	36	36	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
April																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May																																
Maximum	--	--	--	--	--	70	70	70	70	69	69	70	71	70	70	70	69	69	70	70	69	70	69	69	70	70	70	69	70	71	70	70
Minimum	--	--	--	--	--	70	70	70	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
June																																
Maximum	70	69	69	69	69	70	70	71	71	72	72	72	72	72	72	72	72	72	71	71	72	72	72	72	72	73	73	74	74	74	--	72
Minimum	69	69	69	69	69	69	70	70	71	71	72	72	72	72	72	72	72	71	71	71	71	71	71	72	72	71	72	72	73	73	--	71
July																																
Maximum	73	73	73	73	73	73	73	73	75	74	74	74	73	73	73	74	74	73	74	74	75	75	76	77	76	76	76	77	76	76	76	74
Minimum	73	73	73	73	73	73	73	73	73	74	74	73	73	73	73	73	73	73	73	73	73	74	74	75	76	76	76	76	76	76	76	74
August																																
Maximum	76	75	75	76	76	77	77	76	76	77	77	77	77	77	78	79	78	80	78	78	78	78	77	77	77	77	77	77	77	77	76	77
Minimum	75	75	75	75	75	75	76	76	76	76	76	76	76	76	76	77	78	78	78	78	78	77	77	77	77	77	77	77	77	76	76	76
September																																
Maximum	76	76	76	77	77	77	77	78	78	78	78	77	77	78	77	77	78	78	78	77	77	76	75	75	75	76	76	76	76	75	--	77
Minimum	76	76	76	76	77	77	77	77	77	77	77	77	77	76	76	76	76	76	77	77	76	75	75	75	75	75	75	75	75	75	--	76

BIG SANDY RIVER BASIN--Continued

3-2115. JOHNS CREEK NEAR VAN LEAR, KY.

LOCATION.--Temperature recorder at gaging station on right bank, 100 feet upstream from Long Branch, 0.3 mile upstream from Daniels Creek, 0.7 mile downstream from Dewey Dam, and 2.5 miles southeast of Van Lear, Johnson County.
DRAINAGE AREA.--206 square miles.
RECORDS AVAILABLE.--Water temperatures: April 1954 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 72°F May 23; minimum, 36°F Dec. 21-24.
EXTREMES, 1954-65.--Water temperatures: Maximum, 90°F July 3, 1956; minimum, freezing point on several days during December 1962 and January 1963.
REMARKS.--Flow regulated by Dewey Reservoir.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$ Calcium, magnesium	Hardness as $CaCO_3$ Noncarbonate	Potential free acidity (H^{+1})	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen Parts per million	Dissolved oxygen Percent saturation
May 19, 1965	27		0.1	0.15	0.00						18	0	16	2.5		0.4	0.02		28	13	0.0	85	7.4	5	9.0	105

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	66	68	69	70	70	67	67	67	64	63	63	61	60	60	60	60	60	60	60	60	60	60	60	58	58	57	57	57	57	57	57	62
Minimum	65	65	65	67	67	67	65	64	63	63	61	60	60	60	60	60	60	60	60	60	60	59	58	58	57	57	57	57	57	57	56	61
November																																
Maximum	57	57	57	56	56	56	55	54	54	54	54	54	55	55	55	55	55	55	54	54	52	49	49	49	48	47	48	45	48	45	--	53
Minimum	57	56	55	56	56	55	54	54	54	53	53	54	54	54	54	54	55	53	54	52	49	48	48	48	48	46	45	45	45	44	--	52
December																																
Maximum	46	44	43	44	46	46	47	45	46	40	45	41	45	46	46	45	41	40	44	38	37	43	36	37	43	42	46	46	44	44	44	43
Minimum	42	43	42	40	40	45	44	42	40	40	39	40	41	45	44	41	40	39	38	37	36	36	36	36	37	40	42	42	44	44	44	41
January																																
Maximum	44	44	44	44	44	44	44	44	44	44	43	43	43	44	40	41	43	43	39	37	41	37	38	39	39	40	44	45	39	39	44	42
Minimum	44	44	44	43	43	44	44	44	44	42	42	43	41	40	39	39	39	39	37	37	37	37	37	38	38	39	40	39	39	38	40	40
February																																
Maximum	43	39	39	40	40	40	40	41	45	41	41	46	42	42	42	46	42	43	42	42	46	42	42	42	42	44	44	42	--	--	--	42
Minimum	39	39	39	40	40	38	39	39	40	40	41	41	41	41	41	42	42	42	42	42	42	41	42	41	41	40	42	41	--	--	--	41
March																																
Maximum	42	45	43	44	44	46	43	43	43	43	46	44	43	45	45	47	45	45	45	46	46	46	46	46	46	46	46	46	46	46	46	45
Minimum	42	42	42	42	42	43	42	42	43	43	44	43	43	43	45	45	45	45	45	45	46	46	46	46	46	46	46	46	46	46	46	44

April																																
Maximum	46	47	47	47	51	51	51	51	51	51	52	53	53	53	53	54	54	54	54	54	54	56	55	55	56	58	55	55	56	--	--	53
Minimum	46	46	47	47	47	51	51	50	51	51	51	52	53	53	53	53	54	54	54	54	54	54	54	55	55	55	55	54	55	--	--	52
May																																
Maximum	--	--	--	56	58	57	57	58	58	62	62	60	60	60	60	62	64	69	64	58	58	59	72	62	62	62	62	62	62	62	62	61
Minimum	--	--	--	56	56	57	57	57	56	57	59	60	60	60	57	60	62	64	58	58	58	58	59	62	62	62	62	62	62	62	62	59
June																																
Maximum	62	69	65	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	70	66	63	63	63	--	64
Minimum	62	62	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	--	63
July																																
Maximum	62	62	62	62	62	62	66	64	64	64	63	63	63	63	70	70	66	65	64	64	62	62	67	64	71	65	64	64	64	62	62	64
Minimum	62	62	62	62	62	62	62	63	64	63	63	63	63	63	63	65	65	64	64	62	62	62	62	64	64	64	64	64	62	62	62	63
August																																
Maximum	64	64	64	66	65	65	65	66	66	66	66	66	66	66	66	67	67	67	67	67	67	66	66	66	66	66	67	67	67	66	66	66
Minimum	62	64	64	64	65	65	65	65	66	66	66	66	66	66	66	66	67	67	67	67	66	66	66	66	66	66	66	67	65	65	66	66
September																																
Maximum	65	66	68	68	66	66	67	67	68	68	68	68	67	68	69	69	69	69	70	70	69	69	69	69	68	66	66	65	65	65	--	68
Minimum	65	66	64	66	66	65	66	67	67	68	68	66	66	67	68	69	69	69	69	69	69	69	69	68	66	66	65	64	65	65	--	67

BIG SANDY RIVER BASIN--Continued

3-2125. LEVISA FORK AT PAINTSVILLE, KY.

LOCATION.--At bridge on State Highway 40 at Paintsville, Johnson County, 200 feet downstream from Paint Creek, and 700 feet upstream from gaging station.
DRAINAGE AREA.--2,143 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to March 1953, November 1960 to September 1961.
Water temperatures: October 1949 to March 1953, November 1960 to September 1965.
Sediment records: October 1952 to March 1953, October 1960 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 88°F Aug. 16; minimum, 33°F Feb. 2.
Sediment concentrations: Maximum daily, 3,760 ppm Oct. 1; minimum daily, 11 ppm Nov. 15.
Sediment loads: Maximum daily, 144,000 tons Mar. 27; minimum daily, 4 tons Aug. 18, 20-22.
EXTREMES, 1949-53, 1960-65.--Water temperatures: Maximum, 89°F July 21, 23, 1952, July 27, 1963; minimum, freezing point on several days during winter months in 1950, 1960-64.
Sediment concentrations (1952-53, 1960-65): Maximum daily, 3,760 ppm Oct. 1, 1964; minimum daily, 1 ppm on several days during April and May 1963.
Sediment loads (1952-53, 1960-65): Maximum daily, 402,000 tons Mar. 13, 1963; minimum daily, 1 ton on many days during 1952, 1963, and 1964.
REMARKS.--Flow slightly regulated by Dewey Reservoir.

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 1700 and 1900)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	68	68	68	66	64	64	60	60	59	58	56	58	58	60	59	55	53	60	56	55	55	54	54	54	53	55	56	56	57	54	55	58
November	56	56	58	57	58	56	55	54	53	55	58	57	58	59	59	60	58	55	58	50	48	44	45	50	48	51	51	51	47	40	--	54
December	40	43	42	48	47	45	43	44	40	46	45	49	46	47	44	46	40	35	35	35	36	40	45	46	48	49	47	45	48	46	45	44
January	46	45	46	45	47	47	46	47	45	44	43	44	43	40	43	38	35	34	36	38	41	44	43	42	46	48	--	--	--	36	--	43
February	35	33	34	35	38	38	39	41	45	49	50	49	47	45	44	42	44	45	45	44	42	40	40	41	39	38	39	40	--	--	--	41
March	45	47	48	46	45	44	42	43	42	42	43	44	44	46	45	48	55	48	46	40	43	45	45	44	45	46	49	51	50	49	49	46
April	50	49	50	51	55	--	60	60	55	56	62	59	60	58	58	57	58	58	57	60	61	63	62	63	--	64	60	59	58	63	--	58
May	66	68	68	70	70	71	71	72	75	75	--	69	70	72	74	73	73	73	72	71	75	75	74	75	78	80	78	76	78	75	74	73
June	72	78	74	75	76	77	78	--	80	80	81	80	80	78	74	75	76	75	74	77	78	80	83	81	79	80	81	82	80	78	--	78
July	78	79	80	80	80	81	80	81	81	82	81	81	81	82	81	80	79	78	80	80	81	82	82	83	80	81	80	80	78	78	78	80
August	77	76	77	78	81	82	82	81	80	82	83	83	82	82	85	88	87	85	85	80	80	79	78	78	78	80	78	74	72	75	73	80
September	73	74	75	75	75	76	78	79	80	81	81	80	78	76	77	79	80	80	81	82	81	81	78	72	68	66	65	70	--	--	--	76

BIG SANDY RIVER BASIN--Continued

3-2125. LEVISA FORK AT PAINTSVILLE, KY.--Continued

Suspended sediment, water year October 1964 to September 1965

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	6790	3760	68900	2660	94	S 712	1840	49	243
2..	3700	1910	19100	482	31	40	2370	120	A 750
3..	2910	1180	9270	422	26	30	2080	54	S 244
4..	3310	707	S 6940	392	26	28	3670	191	1890
5..	8350	1600	A 36000	364	24	24	4270	164	1890
6.	4830	445	S 6330	352	21	20	3850	132	1370
7..	1810	207	1010	330	16	14	3180	112	962
8..	1120	112	339	321	14	12	2700	49	357
9..	802	66	143	292	15	12	2300	27	168
10..	615	46	76	913	120	A 300	1950	30	158
11..	506	35	48	1600	120	B 500	1830	27	133
12..	437	29	34	309	20	17	2410	52	S 380
13..	390	27	28	287	14	11	8800	971	S 25700
14..	352	26	25	277	13	10	11700	655	20700
15..	324	29	25	285	11	8	5690	250	3840
16..	306	29	24	285	15	12	3720	128	1290
17..	303	28	23	295	12	10	2880	69	537
18..	5110	500	A 6900	1800	140	A 700	2460	60	399
19..	2990	225	1820	373	22	22	2170	51	299
20..	1610	180	782	330	61	54	1850	49	245
21..	1160	81	254	1490	97	S 486	1790	47	227
22..	862	46	107	2490	184	1240	1890	36	184
23..	635	43	74	1750	99	468	1820	31	152
24..	520	35	49	1230	37	123	1880	30	152
25..	450	31	38	2520	79	S 605	2130	57	328
26..	410	26	29	7110	1130	S 25500	2890	108	843
27..	390	23	24	9260	472	S 12800	5990	479	S 8390
28..	376	20	20	4680	154	1950	9250	398	9940
29..	370	22	22	3200	91	786	6640	243	4360
30..	364	23	23	2250	75	456	4740	103	1320
31..	994	112	S 544	--	--	--	3600	91	885
Total	53096	--	159001	48349	--	46950	114340	--	88336

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	2920	87	686	2010	41	223	4230	113	1290
2..	3110	105	882	1730	25	117	3630	94	921
3..	3990	196	2110	1550	28	117	4660	135	1700
4..	3920	131	1390	1110	20	60	5310	162	2320
5..	3660	91	899	1160	14	44	5580	206	3100
6..	3150	69	587	1400	30	113	5400	132	1920
7..	2670	59	425	1940	82	430	4890	100	1320
8..	2300	49	304	3240	161	1410	4580	79	977
9..	2500	74	S 573	4490	216	2620	4550	67	823
10..	9720	753	S 23000	4190	186	2100	4460	73	879
11..	20300	2070	113000	3750	137	1390	4140	71	794
12..	26300	766	54400	3460	105	981	3580	67	648
13..	17500	237	11200	3160	92	785	3220	73	635
14..	8210	185	4100	2880	71	552	2900	73	572
15..	5320	155	2230	2520	60	408	2620	59	417
16..	4580	111	1370	2200	40	238	2330	39	245
17..	3990	97	1040	1860	31	156	2300	160	A 1000
18..	3140	86	729	1740	27	127	4570	290	A 3600
19..	2530	59	403	1810	36	176	8880	521	12500
20..	2370	49	314	1720	38	176	6670	156	2810
21..	2140	48	277	1590	28	120	4370	87	1030
22..	2050	44	244	1380	24	89	3520	69	656
23..	2080	54	303	1300	24	84	3180	55	472
24..	2790	61	460	1250	20	68	3110	53	445
25..	4560	189	2330	2590	901	S 8280	7970	694	S 19400
26..	4790	195	2520	9110	1580	38900	25500	1760	121000
27..	4450	141	1690	8790	265	6290	31800	1680	144000
28..	3600	92	894	5250	150	2130	27300	520	38300
29..	2920	57	449	--	--	--	16900	350	16000
30..	2610	45	317	--	--	--	23600	1880	120000
31..	2450	40	265	--	--	--	26500	547	39100
Total	166620	--	229391	79180	--	68184	262250	--	538874

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

BIG SANDY RIVER BASIN--Continued

3-2125. LEVISA FORK AT PAINTSVILLE, KY.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued

Day	APRIL Mean discharge (cfs)	APRIL Suspended sediment Mean concentration (ppm)	APRIL Suspended sediment Tons per day	MAY Mean discharge (cfs)	MAY Suspended sediment Mean concentration (ppm)	MAY Suspended sediment Tons per day	JUNE Mean discharge (cfs)	JUNE Suspended sediment Mean concentration (ppm)	JUNE Suspended sediment Tons per day
1..	18600	253	12700	3130	57	482	450	101	123
2..	10800	207	6040	2630	54	383	422	98	112
3..	5990	209	3380	2210	46	274	457	89	110
4..	4530	171	2090	1800	45	219	820	80	177
5..	3750	121	1230	1580	45	192	690	687	1280
6..	3290	86	764	1600	43	186	492	309	410
7..	4710	444	S 6780	2260	34	207	410	166	184
8..	9460	770	19700	1770	29	139	387	102	107
9..	11400	665	20500	1270	23	79	355	72	69
10..	11900	750	24100	1410	18	69	331	48	43
11..	8740	285	6730	1360	17	62	313	55	A 45
12..	6070	219	3590	2470	310	A 2100	349	85	A 80
13..	5170	186	2600	2050	127	703	325	49	43
14..	4410	119	1420	1510	96	391	280	35	26
15..	3820	134	1380	1190	72	231	271	31	23
16..	4780	197	2540	880	45	107	277	32	24
17..	9490	426	10500	724	31	61	269	34	25
18..	8400	234	5310	655	31	55	275	26	19
19..	6100	118	1940	1070	89	S 276	275	22	16
20..	4920	105	1390	2170	1300	A 7900	269	19	14
21..	4070	63	692	1480	389	1550	240	15	10
22..	3430	56	519	1050	151	428	213	18	10
23..	3570	144	1390	1270	207	710	199	20	11
24..	3810	69	710	1130	219	668	196	17	9
25..	3500	47	444	1040	218	612	187	16	8
26..	5760	147	2290	724	149	291	182	18	9
27..	7310	427	8430	595	119	191	217	20	12
28..	6950	293	5500	844	114	260	202	20	11
29..	5090	116	1590	826	109	243	170	21	10
30..	3780	70	714	645	98	155	289	54	S 46
31..	--	--	--	526	109	155	--	--	--
Total	193600	--	156963	43869	--	19379	9812	--	3066

Day	JULY Mean discharge (cfs)	JULY Suspended sediment Mean concentration (ppm)	JULY Suspended sediment Tons per day	AUGUST Mean discharge (cfs)	AUGUST Suspended sediment Mean concentration (ppm)	AUGUST Suspended sediment Tons per day	SEPTEMBER Mean discharge (cfs)	SEPTEMBER Suspended sediment Mean concentration (ppm)	SEPTEMBER Suspended sediment Tons per day
1..	1020	294	S 920	251	67	45	193	91	47
2..	1110	260	779	245	59	39	159	74	32
3..	675	211	385	214	52	30	139	58	22
4..	447	185	223	187	49	25	125	61	21
5..	352	150	143	164	46	20	110	53	16
6..	328	120	106	144	41	16	98	40	11
7..	343	88	81	164	35	15	92	37	9
8..	340	90	83	153	29	12	84	33	7
9..	358	91	88	139	27	10	78	29	6
10..	352	68	65	130	25	9	75	25	5
11..	454	58	71	114	24	7	100	25	7
12..	464	66	83	139	26	10	310	80	A 65
13..	1010	--	E 230	164	28	12	331	64	57
14..	655	39	69	136	26	10	214	65	38
15..	663	--	E 160	114	21	6	150	50	20
16..	880	67	159	98	19	5	130	46	16
17..	605	31	51	90	20	5	122	50	16
18..	590	66	105	79	21	4	108	46	13
19..	496	41	55	82	21	5	100	41	11
20..	405	64	70	82	19	4	92	36	9
21..	313	68	57	87	18	B 4	100	24	6
22..	260	73	51	98	15	B 4	92	22	5
23..	470	194	S 281	1050	--	E 6000	90	26	6
24..	573	--	E 1200	1110	2000	A 6000	214	75	A 45
25..	700	157	297	499	751	1010	286	73	56
26..	522	--	E 160	376	480	487	231	38	24
27..	1030	1090	3030	422	367	418	301	34	28
28..	630	370	629	422	287	327	319	29	25
29..	526	144	205	334	280	253	260	29	20
30..	382	86	89	275	245	182	228	34	21
31..	301	75	61	240	131	85	--	--	--
Total	17254	--	9986	7802	--	15059	4931	--	664

Total discharge for year (cfs-days)..1001103
Total load for year (tons)...1335853

E Estimated.
S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

BIG SANDY RIVER BASIN--Continued

3-2125. LEVISA FORK AT PAINTSVILLE, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Jan. 11, 1965.......	1700			22400	2220		34	50	66	83	94	98	99	100	--			SBWC
Mar. 27.............	0141			30400	1640		35	50	66	82	92	96	98	99	100			SBWC
Mar. 27.............	0141			30400	1640		23	33	48	66	85	92	97	98	100			SBN
Mar. 27.............	1115			31900	1710		32	48	63	80	89	95	97	98	100			SBWC
Mar. 27.............	1115			31900	1710		22	33	49	64	83	91	96	97	99	100		SBN
July 27.............	1900			934	958		71	91	98	99	99	100	--	--	--			SBWC
Aug. 24.............	1900			826	1560		59	79	94	98	99	100	--	--	--			SBWC

BIG SANDY RIVER BASIN--Continued

3-2145. TUG FORK AT KERMIT, W. VA.

LOCATION.--At city waterplant, at Kermit, Mingo County, 0.8 mile downstream from Wolf Creek, and 3 miles downstream from gaging station near Kermit.
DRAINAGE AREA.--1,274 square miles at waterplant; 1,185 square miles at gaging station.
RECORDS AVAILABLE.--Water temperatures: October 1946 to September 1965.
EXTREMES, 1964-65.--Water temperatures: **Maximum**, 81°F July 24, Aug. 17; minimum, 36°F Feb. 1, 3-5.
EXTREMES, 1946-65.--Water temperatures: **Maximum**, 90°F July 29, 1949; minimum, freezing point on several days 1947 and 1951.

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	65	67	68	67	62	59	57	56	58	54	53	52	54	56	59	58	59	60	60	57	54	55	54	52	51	50	52	53	56	59	59	57
November	59	60	55	54	54	53	53	53	52	50	50	52	55	52	52	55	58	59	58	55	51	42	42	47	45	50	49	52	52	48	--	52
December	41	41	46	49	51	48	43	43	43	42	47	50	50	51	47	43	42	42	38	42	39	42	43	46	49	49	47	50	48	50	49	46
January	48	49	47	45	48	47	44	45	42	42	47	45	45	45	44	42	38	40	38	38	40	40	42	43	47	49	48	45	43	42	37	44
February	36	37	36	36	36	38	43	45	50	51	55	55	53	48	45	45	45	46	48	43	44	42	41	44	46	41	40	42	--	--	--	44
March	46	49	52	53	50	48	49	46	47	46	45	45	50	49	48	48	52	50	51	51	45	44	47	52	50	50	51	51	54	55	52	49
April	51	51	52	55	56	58	59	59	60	59	58	63	62	60	59	58	59	58	60	59	60	62	63	66	68	68	62	60	57	57	--	59
May	60	65	57	66	69	69	70	72	74	74	73	74	74	72	70	72	72	72	72	72	72	72	75	76	77	77	76	74	71	70	69	71
June	69	70	72	72	73	74	74	74	74	74	76	78	78	78	78	76	74	72	70	72	73	75	77	79	75	74	76	76	74	77	--	74
July	74	75	77	78	77	75	78	77	80	79	79	76	78	80	80	78	78	78	78	76	76	75	80	81	79	79	74	73	79	76	77	77
August	76	77	72	71	75	78	77	80	80	77	75	74	76	79	80	80	81	80	80	78	75	76	78	74	77	78	79	79	73	69	68	77
September	74	69	70	75	77	73	76	75	75	75	78	78	74	73	74	77	76	77	79	79	78	79	78	75	69	65	64	65	65	67	--	74

TYGARTS CREEK BASIN

3-2170. TYGARTS CREEK NEAR GREENUP, KY.

LOCATION.--At gaging station at bridge on State Highway 7, 100 feet downstream from Lick Run, 0.4 mile upstream from White Oak Creek, and 6.5 miles west of Greenup, Greenup County.
DRAINAGE AREA.--242 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1956 to September 1965.
Sediment records: October 1956 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 80°F June 22; minimum, freezing point on several days in January and February.
Sediment concentrations: Maximum daily, 1,720 ppm Apr. 9; minimum daily, 3 ppm on several days during December and March.
Sediment loads: Maximum daily, 14,800 tons Apr. 9; minimum daily, less than 0.05 ton on many days during October and November.
EXTREMES, 1956-65.--Water temperatures: Maximum, 85°F June 23, 1964; minimum, freezing point on many days during winter months.
Sediment concentrations: Maximum daily, 1,600 ppm Aug. 12, 1964; minimum daily, no flow Sept. 25, 26, 1964.
Sediment loads: Maximum daily, 31,600 tons Feb. 26, 1962; minimum daily, 0 tons Sept. 25, 26, 1964.
REMARKS.--Occasional regulation of low flow caused by withdrawal of water for cooling purposes by gas transmission plant above station. Flow affected by ice Feb. 1-5.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Potential free acidity (H^{+1})	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen: ppm	Dissolved oxygen: Percent saturation
May 22, 1965.	30.0		0.0	0.07	0.17						94	0	25	4.0		0.2	0.01		102	25	0.0	223	7.4	3	7.2	81

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 1600 and 1800)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	68	68	65	68	64	65	62	58	58	59	58	58	62	62	58	72	68	71	56	62	62	62	52	52	56	60	52	52	52	54	60	61
November	61	62	58	54	--	54	54	56	53	54	54	56	57	56	58	50	50	48	49	45	46	48	49	48	45	44	45	44	45	45	--	51
December	44	44	45	45	44	43	40	40	40	40	42	49	40	45	45	43	40	40	35	36	37	42	45	47	--	40	40	43	40	45	45	42
January	45	42	45	45	42	43	48	45	42	34	34	38	38	38	38	35	32	32	32	35	38	40	40	38	38	38	38	37	34	--	33	39
February	32	33	32	32	36	37	40	38	37	38	38	38	39	40	40	42	42	43	40	42	40	40	40	38	34	34	38	42	--	--	--	38
March	40	42	40	35	40	42	40	40	38	40	40	43	43	45	45	46	44	43	45	36	39	42	42	36	37	40	44	45	40	43	40	41
April	45	48	46	48	52	55	58	--	55	56	56	57	58	56	57	55	58	58	58	62	60	62	62	62	62	60	62	60	62	60	--	57
May	62	60	62	62	63	64	68	73	70	73	74	74	75	74	75	75	72	73	74	68	75	75	75	75	75	75	75	75	74	74	75	71
June	76	72	69	76	72	76	75	75	76	72	75	75	74	74	70	70	71	74	74	75	75	80	75	75	75	75	75	75	75	74	--	74
July	75	75	78	76	78	78	75	--	--	75	72	72	75	74	75	76	75	76	76	77	77	76	77	77	75	74	75	76	75	74	74	75
August	76	72	71	73	74	75	75	74	75	74	75	75	73	78	74	75	76	74	75	75	76	75	75	75	75	76	76	74	73	70	70	74
September	70	71	78	73	71	73	74	78	70	78	73	67	70	74	71	72	72	75	75	75	70	70	70	70	67	69	62	65	66	68	--	71

TYGARTS CREEK BASIN--Continued

3-2170. TYGARTS CREEK NEAR GREENUP, KY.--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER Mean discharge (cfs)	OCTOBER Suspended sediment Mean concentration (ppm)	OCTOBER Suspended sediment Tons per day	NOVEMBER Mean discharge (cfs)	NOVEMBER Suspended sediment Mean concentration (ppm)	NOVEMBER Suspended sediment Tons per day	DECEMBER Mean discharge (cfs)	DECEMBER Suspended sediment Mean concentration (ppm)	DECEMBER Suspended sediment Tons per day
1..	126	52	18	2.1	8	T	28	12	0.9
2..	54	57	8.3	2.1	14	0.1	23	10	.6
3..	34	63	5.8	1.8	13	.1	311	171	S 334
4..	25	47	3.2	1.8	7	T	1000	386	1040
5..	20	32	1.7	1.8	5	T	1120	369	S 1260
6..	21	28	1.5	1.8	8	T	429	152	176
7..	14	25	.9	1.5	8	T	206	61	34
8..	10	22	.6	1.5	7	T	115	25	7.8
9..	6.8	20	.4	1.5	9	T	87	8	1.9
10..	6.3	20	.3	1.4	12	T	72	5	1.0
11..	5.4	14	.2	1.1	12	T	220	15	8.9
12..	3.6	10	.1	.9	11	T	2240	485	S 3320
13..	2.7	11	.1	.9	10	T	1530	348	S 1700
14..	2.1	12	.1	.9	10	T	625	120	202
15..	2.4	13	.1	.7	10	T	489	66	87
16..	2.4	14	.1	.7	10	T	304	22	18
17..	2.7	14	.1	.7	10	T	154	14	5.8
18..	3.0	10	.1	.7	12	T	123	14	4.6
19..	1.1	8	T	1.5	14	.1	95	13	3.3
20..	.8	9	T	24	14	.9	77	3	.6
21..	.8	10	T	123	15	5.0	68	8	1.5
22..	.8	10	T	69	14	2.6	68	5	.9
23..	1.1	9	T	36	14	1.4	63	5	.9
24..	1.4	9	T	28	14	1.1	62	5	.8
25..	1.4	8	T	34	13	1.2	229	75	B 45
26..	1.5	6	T	110	20	5.9	852	80	A 180
27..	1.8	9	T	178	21	10	1100	120	A 360
28..	2.1	9	.1	91	13	3.2	645	47	82
29..	2.1	9	.1	62	11	1.8	441	24	29
30..	2.1	10	.1	45	14	1.7	297	15	12
31..	2.1	7	T	--	--	--	210	13	7.4
Total	360.5	--	42.2	825.4	--	35.6	13283	--	8925.9

Day	JANUARY Mean discharge (cfs)	JANUARY Mean concentration (ppm)	JANUARY Tons per day	FEBRUARY Mean discharge (cfs)	FEBRUARY Mean concentration (ppm)	FEBRUARY Tons per day	MARCH Mean discharge (cfs)	MARCH Mean concentration (ppm)	MARCH Tons per day
1..	285	18	14	95	5	1.3	509	15	21
2..	610	320	S 1980	80	3	.6	449	20	24
3..	790	264	S 1480	70	3	.6	1080	--	330
4..	685	51	94	65	3	.5	822	30	B 65
5..	445	23	28	60	3	.5	920	19	B 45
6..	311	11	9.2	57	4	.6	811	10	22
7..	238	18	12	510	33	S 83	641	7	12
8..	178	21	10	1300	210	A 750	641	10	17
9..	315	15	13	748	54	109	565	5	7.6
10..	856	27	62	1040	58	S 185	477	3	3.9
11..	677	33	60	1460	130	A 500	377	3	3.1
12..	533	17	24	981	56	148	304	4	3.3
13..	509	9	12	804	32	69	258	5	3.5
14..	509	8	11	521	12	17	224	5	3.0
15..	449	7	8.5	389	7	7.4	188	5	2.5
16..	365	7	6.9	297	4	3.2	157	5	2.1
17..	272	5	3.7	241	3	2.0	1220	800	A 2600
18..	199	4	2.1	196	3	1.6	2810	850	A 6400
19..	164	3	1.3	157	3	1.3	902	110	268
20..	147	3	1.2	126	4	1.4	573	46	71
21..	164	3	1.3	108	4	1.2	425	21	24
22..	164	3	1.3	105	4	1.1	353	15	14
23..	150	4	1.6	93	4	1.0	314	14	12
24..	234	5	3.2	119	8	2.6	449	16	19
25..	272	7	5.1	1180	120	A 380	1970	208	S 1260
26..	269	7	5.1	853	66	152	4300	731	8490
27..	280	7	5.3	509	32	44	3140	284	S 2900
28..	266	7	5.0	513	20	28	909	69	169
29..	224	8	4.8	--	--	--	1530	247	1020
30..	164	7	3.1	--	--	--	1180	140	446
31..	115	6	1.9	--	--	--	762	55	113
Total	12839	--	3870.6	12677	--	2491.9	29260	--	24371.0

S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

TYGARTS CREEK BASIN--Continued

3-2170. TYGARTS CREEK NEAR GREENUP, KY.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	553	23	34	377	15	15	25	9	0.6
2..	457	24	30	294	14	11	25	10	.7
3..	357	17	16	238	11	7.0	36	20	1.9
4..	294	13	10	192	11	5.7	182	30	A 15
5..	248	15	10	154	11	4.5	87	6	1.4
6..	238	18	12	132	11	3.9	57	12	1.8
7..	244	14	9.2	110	14	4.2	51	10	1.4
8..	486	107	S 253	91	16	3.9	140	4	1.5
9..	3380	1720	S 14800	77	15	3.1	102	7	1.9
10..	1500	303	1230	69	14	2.6	60	10	1.6
11..	2710	469	S 3850	63	15	2.6	48	8	1.0
12..	2590	321	S 2400	60	14	2.3	38	9	.9
13..	828	139	311	56	11	1.7	48	11	1.4
14..	589	49	78	51	10	1.4	47	25	3.1
15..	497	26	35	47	12	1.5	32	34	2.9
16..	734	30	59	43	14	1.6	26	33	2.3
17..	720	37	72	39	14	1.5	21	29	1.6
18..	545	29	43	36	14	1.4	18	20	1.0
19..	1800	212	S 1280	34	14	1.3	16	16	.7
20..	1900	158	S 922	34	16	1.5	14	12	.5
21..	766	42	87	33	13	1.2	12	7	.2
22..	633	21	36	33	13	1.2	11	9	.3
23..	509	18	25	31	12	1.0	10	9	.2
24..	696	32	60	31	11	.9	8.6	9	.2
25..	913	120	A 300	37	11	1.1	7.2	8	.2
26..	3020	700	A 5700	38	11	1.1	7.2	6	.1
27..	2290	117	S 863	37	11	1.1	7.2	5	.1
28..	850	38	87	34	11	1.0	12	5	.2
29..	605	14	23	30	10	.8	12	4	.1
30..	493	12	16	28	10	.8	9.0	5	.1
31..	--	--	--	27	9	.7	--	--	--
Total	31445	--	32651.2	2556	--	88.6	1169.2	--	44.9

Day	JULY			AUGUST			SEPTEMBER		
1..	42	9	1.0	19	43	2.2	601	--	900
2..	171	7	3.2	16	44	1.9	314	144	122
3..	64	7	1.2	14	46	1.7	141	54	21
4..	108	7	2.0	11	41	1.2	69	45	8.4
5..	105	11	3.1	14	40	1.5	48	38	4.9
6..	68	9	1.7	13	39	1.4	36	33	3.2
7..	56	17	2.6	10	37	1.0	28	31	2.3
8..	57	20	3.1	9.0	21	.5	23	28	1.7
9..	38	14	1.4	7.2	11	.2	19	26	1.3
10..	56	17	2.6	5.4	9	.1	14	25	.9
11..	572	--	1000	6.3	11	.2	15	28	1.1
12..	365	420	A 410	20	14	.8	30	24	1.9
13..	157	217	92	15	21	.9	93	34	S 9.7
14..	83	188	42	9.6	32	.8	129	29	10
15..	55	200	30	6.3	26	.4	81	24	5.2
16..	39	189	20	3.9	22	.2	55	21	3.1
17..	34	141	13	3.5	24	.2	40	16	1.7
18..	30	103	8.3	3.5	29	.3	32	13	1.1
19..	23	80	5.0	14	35	1.3	28	12	.9
20..	18	47	2.3	23	39	2.4	25	15	1.0
21..	14	37	1.4	21	39	2.2	26	15	1.0
22..	11	36	1.1	17	37	1.7	22	14	.8
23..	19	45	S 2.8	62	38	6.4	20	16	.9
24..	699	--	1000	59	39	6.2	45	38	S 5.8
25..	473	--	600	68	38	7.0	234	70	44
26..	182	88	43	39	37	3.9	188	33	17
27..	89	38	9.1	27	40	2.9	93	17	4.2
28..	54	48	7.0	19	43	2.2	62	18	3.0
29..	37	58	5.8	13	45	1.6	46	17	2.1
30..	28	60	4.5	9.0	41	.1	38	12	1.2
31..	23	57	3.5	35	--	4	--	--	--
Total	3770	--	3322.7	592.7	--	57.4	2595	--	1181.4

Total discharge for year (cfs-days).. 111372.8
Total load for year (tons).. 77083.4

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.

TYGARTS CREEK BASIN--Continued

3-2170. TYGARTS CREEK NEAR GREENUP, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Mar. 26, 1965.......	1544			4900	705		30	45	59	76	82	93	96	100				SBWC
Mar. 26............	1544			4900	705		26	43	59	77	84	90	96	99	100			SBN
Apr. 9.............	0830			3700	2940		45	62	75	89	97	98	99	100				SBWC

SCIOTO RIVER BASIN

3-2245. WHETSTONE CREEK NEAR ASHLEY, OHIO

LOCATION.--At gaging station on left bank, 800 feet upstream from bridge on State Highway 746 in Morrow County, 0.6 mile downstream from Shaw Creek, and 3.2 miles north of Ashley, Delaware County.
DRAINAGE AREA.--98.5 square miles.
RECORDS AVAILABLE.--Chemical analyses (conductance recorder only): October 1964 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 3,000 (recorded) micromhos Nov. 11-25, 30, 31, minimum daily, 160 micromhos Feb. 21.
REMARKS.--Conductance recorder is installed in gagehouse with probe in creek.

Specific conductance, water year October 1964 to September 1965

Day	OCTOBER								NOVEMBER							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	--	--							2600	2550						
2..	--	--							2550	2280						
3..	--	--							2280	2100						
4..	--	--							2100	1900						
5..	--	--							1900	1730						
6..	--	--							1880	1640						
7..	--	--							2200	1850						
8..	--	--							2200	2100						
9..	--	--							2600	2200						
10..	--	--							2820	2400						
11..	--	--							3000	2700						
12..	--	--							3000	2800						
13..	--	--							3000	2900						
14..	--	--							3000	3000						
15..	--	--							3000	3000						
16..	--	--							3000	3000						
17..	--	--							3000	3000						
18..	--	--							3000	3000						
19..	--	--							3000	2890						
20..	--	--							3000	3000						
21..	--	--							3000	3000						
22..	--	--							3000	2900						
23..	--	--							3000	2900						
24..	--	--							3000	3000						
25..	--	--							3000	2830						
26..	--	--							2830	2550						
27..	--	--							2810	2550						
28..	--	--							2710	2600						
29..	2800	--							3000	2710						
30..	2800	2750							3000	2720						
31..	2750	2600							--	--						

Day	DECEMBER								JANUARY							
1..	2720	2600							1340	1300						
2..	2700	2600							--	--						
3..	2800	2700							--	--						
4..	2800	2180							810	760						
5..	2460	2180							960	810						
6..	2460	2350							1140	960						
7..	2350	2350							1170	1140						
8..	2350	2330							1270	1170						
9..	2330	2180							1270	1070						
10..	2180	2150							1070	820						
11..	2180	1690							870	820						
12..	2140	1350							1010	870						
13..	1350	1100							1080	1010						
14..	1100	1060							1240	1080						
15..	1230	1070							1330	1240						
16..	1340	1230							1380	1330						
17..	1360	1340							1530	1380						
18..	1540	1210							1580	1530						
19..	1680	1540							1640	1550						
20..	1600	600							1580	1550						
21..	1720	480							1580	1560						
22..	--	--							1560	1540						
23..	2000	--							1540	400						
24..	2000	1830							400	300						
25..	1830	1600							--	--						
26..	1820	1030							--	--						
27..	1030	930							--	--						
28..	1040	960							--	--						
29..	1140	1040							--	--						
30..	1230	1140							--	--						
31..	1300	1230							--	--						

SCIOTO RIVER BASIN--Continued

3-2245. WHETSTONE CREEK NEAR ASHLEY, OHIO--Continued

Specific conductance, water year October 1964 to September 1965--Continued

FEBRUARY

Day	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min
1	--	--						
2	--	--						
3	1440	1400						
4	1480	1400						
5	1460	1440						
6	1470	1450						
7	1480	930						
8	960	500						
9	510	410						
10	480	390						
11	500	400						
12	430	310						
13	500	320						
14	1080	500						
15	790	720						
16	880	770						
17	1000	880						
18	1070	930						
19	1000	980						
20	1030	930						
21	1240	160						
22	1240	220						
23	1300	1210						
24	1330	1250						
25	1320	580						
26	580	460						
27	690	530						
28	720	620						
29	--	--						
30	--	--						
31	--	--						

MARCH

Day	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min
1	620	460						
2	530	470						
3	650	530						
4	660	520						
5	530	370						
6	530	390						
7	640	530						
8	590	510						
9	620	520						
10	670	620						
11	690	650						
12	770	690						
13	840	770						
14	850	830						
15	860	850						
16	880	860						
17	890	860						
18	1000	860						
19	990	930						
20	940	930						
21	950	940						
22	950	930						
23	930	710						
24	710	390						
25	590	400						
26	680	550						
27	750	680						
28	850	750						
29	860	580						
30	580	480						
31	670	520						

APRIL

Day	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min
1	750	670						
2	820	750						
3	820	740						
4	780	760						
5	860	780						
6	840	680						
7	810	720						
8	740	500						
9	690	420						
10	550	420						
11	680	550						
12	680	330						
13	530	340						
14	650	530						
15	730	650						
16	770	730						
17	760	730						
18	820	740						
19	860	820						
20	860	820						
21	820	770						
22	880	820						
23	870	800						
24	1050	670						
25	670	470						
26	480	420						
27	570	460						
28	670	570						
29	730	670						
30	790	730						
31	--	--						

MAY

Day	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min
1	990	770						
2	900	800						
3	--	--						
4	--	--						
5	--	--						
6	--	--						
7	1320	1240						
8	1340	1240						
9	1340	1240						
10	1350	1240						
11	1330	1270						
12	1350	1270						
13	1460	1320						
14	1430	1320						
15	1400	1300						
16	1460	1300						
17	1420	1360						
18	--	--						
19	--	--						
20	--	--						
21	--	--						
22	--	--						
23	--	--						
24	--	--						
25	1520	1190						
26	1450	1300						
27	1370	1100						
28	1130	1060						
29	1130	1040						
30	1130	1000						
31	1040	760						

SCIOTO RIVER BASIN--Continued

3-2245. WHETSTONE CREEK NEAR ASHLEY, OHIO--Continued

Specific conductance, water year October 1964 to September 1965--Continued

Day	JUNE								JULY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	1200	--							1430	1360						
2..	1340	--							1400	1370						
3..	1440	1270							1460	1400						
4..	--	--							1550	1430						
5..	1500	1150							1560	1530						
6..	1460	1190							1580	1560						
7..	1300	1000							1570	1540						
8..	1030	1020							1550	1540						
9..	1030	1000							1580	1510						
10..	1750	440							1600	1560						
11..	600	450							1680	1600						
12..	740	600							1740	1670						
13..	880	740							1800	1740						
14..	990	880							1800	1480						
15..	1020	940							1700	1420						
16..	1080	960							1680	1650						
17..	1120	960							1660	1630						
18..	1240	1010							1650	1630						
19..	1330	1060							1690	1620						
20..	1370	1080							1700	1670						
21..	1320	1140							1700	1480						
22..	1370	1230							1640	1420						
23..	1400	1280							1680	1570						
24..	1430	1190							1700	1480						
25..	1200	950							1630	1590						
26..	1380	1200							1660	1600						
27..	1420	1270							1660	1630						
28..	1450	1370							1690	1560						
29..	1430	1360							1760	1500						
30..	1380	1360							1780	1420						
31..	--	--							1700	1540						

Day	AUGUST								SEPTEMBER							
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	1660	1600							1340	1320						
2..	1600	1600							1340	1310						
3..	1600	1600							1340	1300						
4..	1600	1600							1300	1240						
5..	1600	1590							1240	1240						
6..	1600	1600							1240	1240						
7..	1600	1600							1240	1230						
8..	1610	1600							1310	920						
9..	1620	1610							1000	900						
10..	1620	1610							1160	1000						
11..	1610	1600							1230	1160						
12..	1600	1500							1260	1230						
13..	1510	1460							1260	1200						
14..	1460	1410							1230	1200						
15..	1430	1370							1230	1100						
16..	1370	1300							1300	1160						
17..	1300	1040							1400	1300						
18..	1240	1100							1400	1400						
19..	1100	920							1420	1400						
20..	980	920							1430	1420						
21..	1000	980							1430	1430						
22..	1140	1000							1430	1360						
23..	1200	1140							1360	1220						
24..	1260	1200							1230	1210						
25..	1330	1250							1220	1210						
26..	1370	1330							1230	1220						
27..	1390	1370							1230	1230						
28..	1410	1390							1230	1220						
29..	1410	1370							1220	1200						
30..	1370	1340							1320	1200						
31..	1340	1340							--	--						

SCIOTO RIVER BASIN--Continued

3-2245. WHETSTONE CREEK NEAR ASHLEY, OHIO--Continued

Chloride, in parts per million, water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1....	--	--	--	--	--	--	--	--	--	--	--	--
2....	--	--	--	--	--	--	--	--	--	--	--	--
3....	--	--	--	--	320	--	--	--	--	--	--	--
4....	--	--	--	117	--	--	--	--	--	--	--	--
5....	--	--	--	--	--	--	--	--	235	--	--	--
6....	--	378	--	--	--	--	--	--	--	--	--	--
7....	--	--	--	--	--	--	--	220	--	--	--	--
8....	--	--	--	--	--	--	88	--	--	--	--	270
9....	--	--	530	--	--	--	--	--	--	--	--	--
10....	--	--	--	--	36	--	--	--	--	--	--	--
11....	--	--	--	--	--	100	--	--	48	--	--	--
12....	--	--	--	--	--	--	--	--	--	--	305	--
13....	--	--	--	--	--	--	--	--	--	--	--	--
14....	--	--	178	--	--	--	72	--	--	--	--	--
15....	--	--	--	--	--	--	--	--	--	345	--	--
16....	--	--	--	--	--	--	--	--	--	--	--	--
17....	--	--	--	--	--	--	--	--	--	--	--	--
18....	--	--	--	--	--	--	--	--	--	--	--	--
19....	--	740	--	360	--	--	--	--	--	--	190	--
20....	--	--	--	--	--	--	--	--	--	--	--	--
21....	--	--	--	--	--	--	--	--	--	--	--	--
22....	--	--	--	--	--	183	--	--	230	--	--	262
23....	--	--	--	--	--	--	--	--	--	--	--	--
24....	--	--	--	--	--	--	--	--	--	--	--	--
25....	--	--	--	--	160	64	--	212	--	--	--	--
26....	680	--	--	--	--	--	--	--	--	360	--	--
27....	690	--	--	--	--	--	--	--	--	--	--	--
28....	--	--	--	--	--	--	--	--	--	--	--	--
29....	--	--	204	--	--	--	--	--	--	--	--	--
30....	690	720	--	--	--	--	--	--	--	--	--	--
31....	--	--	--	--	--	--	--	--	--	--	--	--
Average	--	--	--	--	--	--	--	--	--	--	--	--

SCIOTO RIVER BASIN--Continued

3-2268. OLENTANGY RIVER NEAR WORTHINGTON, OHIO

LOCATION.--Temperature recorder at gaging station on right bank, 30 feet downstream from Wilson Bridge, 1.5 miles northwest of Worthington, Franklin County, and 2.8 miles upstream from Rush Run.
DRAINAGE AREA.--497 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1955 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 86°F June 29; minimum, freezing point on several days during January and February.
EXTREMES, 1955-65.--Water temperatures: Maximum, 88°F July 7, 1962; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	65	66	64	62	58	56	55	54	54	52	51	52	55	56	58	58	60	59	56	53	51	51	50	48	50	52	55	57	57	54	53	56
Minimum	57	62	60	58	55	51	50	50	52	48	45	45	48	50	51	53	54	54	53	49	47	46	46	43	44	46	50	53	54	51	48	51
November																																
Maximum	53	55	56	56	56	53	50	51	51	52	54	56	55	52	51	54	53	52	50	46	40	36	36	38	42	44	46	46	44	40	--	49
Minimum	47	50	52	52	52	49	46	47	47	46	50	52	52	47	46	51	51	49	46	40	36	34	34	35	38	42	44	44	40	36	--	45
December																																
Maximum	36	35	35	37	37	36	35	35	35	35	40	44	42	40	37	35	35	35	35	34	35	34	33	42	42	43	41	37	37	43	42	37
Minimum	34	34	34	35	36	35	34	34	35	34	35	40	40	37	34	34	34	34	34	34	34	33	33	33	42	41	37	35	35	37	39	35
January																																
Maximum	39	40	39	35	36	37	38	45	45	40	36	37	37	36	33	33	34	34	34	33	33	33	33	35	35	36	37	38	38	38	34	36
Minimum	37	37	35	34	35	36	36	38	40	36	34	34	36	33	33	33	33	34	33	33	33	32	32	32	35	34	34	34	36	34	34	35
February																																
Maximum	34	34	35	34	34	34	33	32	35	40	38	39	38	39	40	40	42	42	41	40	38	41	38	34	34	34	36	40	--	--	--	37
Minimum	34	34	34	34	34	33	32	32	32	35	36	37	37	38	38	38	38	40	37	36	36	34	33	33	33	33	33	36	--	--	--	35
March																																
Maximum	40	40	38	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	36	37	38	37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
April																																
Maximum	--	--	--	--	--	--	52	52	52	52	52	54	52	51	51	50	51	51	52	54	59	59	57	55	52	52	51	54	56	59	--	53
Minimum	--	--	--	--	--	--	51	50	49	46	51	52	50	48	50	48	47	49	48	50	53	55	54	51	50	50	49	50	51	52	--	50
May																																
Maximum	61	64	67	68	70	71	70	74	75	72	71	71	71	71	71	73	71	73	76	73	72	76	75	79	80	80	78	75	66	66	70	72
Minimum	56	58	60	63	65	66	67	66	68	69	65	65	64	63	64	67	67	65	69	68	65	69	71	70	74	73	74	66	63	62	63	66
June																																
Maximum	71	70	71	72	75	76	74	72	76	76	78	78	76	71	72	72	72	72	74	78	76	74	79	79	78	78	79	82	86	81	--	76
Minimum	66	68	66	64	67	72	71	70	70	72	72	73	71	67	66	67	67	66	66	68	71	72	74	73	68	68	70	73	76	76	--	70
July																																
Maximum	76	74	76	79	79	80	80	82	80	78	79	79	81	83	83	81	80	80	78	75	76	78	78	85	83	82	79	78	76	74	73	79
Minimum	69	69	70	69	73	72	75	74	75	73	72	72	72	76	77	74	75	74	72	70	68	70	73	76	79	74	75	73	70	68	68	72
August																																
Maximum	72	72	72	70	75	79	78	74	76	75	73	75	78	81	83	85	84	82	79	77	75	75	76	76	74	77	76	75	69	67	66	76
Minimum	69	70	66	68	66	72	74	72	72	71	68	68	70	74	76	78	79	77	76	72	69	71	72	70	70	71	73	68	63	64	64	71
September																																
Maximum	68	68	69	72	72	70	74	76	78	79	78	68	68	70	69	67	70	74	76	78	78	77	74	69	63	62	62	63	76	64	--	71
Minimum	65	63	62	67	69	68	67	70	72	73	68	66	66	66	66	64	63	68	71	72	72	72	69	61	57	56	58	57	60	62	--	66

SCIOTO RIVER BASIN--Continued

3-2288.05. ALUM CREEK AT AFRICA, OHIO

LOCATION.--At gaging station at bridge on Orange Township Road 109, 0.3 mile west of Africa, Delaware County, and 4.2 miles northwest of Westerville.
DRAINAGE AREA.--122 square miles.
RECORDS AVAILABLE.--Chemical analyses: December 1964 to August 1965 (periodic).

Chemical analyses, in parts per million, December 1964 to August 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color
														Calcium, magnesium	Noncarbonate			
Dec. 9, 1964	9.9									320						1700		
Dec. 17	16									405						1910		
Dec. 29	26									424						1810		
Jan. 4, 1965A	57									264						1310		
Jan. 19	12									305						1600		
Feb. 3	18									285						1520		
Feb. 23	22									145						1040		
Mar. 11	134									82						672		
Apr. 8	544									63						578		
Apr. 14	177									46						537		
May 7	31									90						818		
May 25	10									128						1050		
June 23	2.5									102						929		
July 28	1.5									280						1550		
Aug. 12	7.4									110						848		
Aug. 19	12									110						832		
Aug. 30	1.8									238						1240		

A Includes 13.0 ppm dissolved oxygen (94 percent saturation).

SCIOTO RIVER BASIN--Continued

3-2290. ALUM CREEK AT COLUMBUS, OHIO

LOCATION.--At Livingston Avenue Bridge, 0.2 mile upstream from gaging station at Columbus, Franklin County, and 6 miles upstream from mouth.
DRAINAGE AREA.--189 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1965 (discontinued). October 1960 to September 1963, unpublished.
Sediment records: October 1960 to September 1965 (discontinued).
EXTREMES, 1964-65.--Water temperatures: Maximum, not determined; minimum, freezing point Feb. 25, 26.
Sediment concentrations: Maximum daily, 941 ppm Jan. 24; minimum daily, 4 ppm Nov. 24.
Sediment loads: Maximum daily, 5,000 tons Apr. 9; minimum daily, 0.1 ton Nov. 1, 24, Aug. 15, 16, Sept. 29.
EXTREMES, 1960-65.--Water temperatures (1963-65): Maximum, 85°F July 20, 24, 29, 1964; minimum, freezing point on several days during December 1963, January 1964, and February 1965.
Sediment concentrations: Maximum daily, 1,100 ppm June 14, 1964; minimum daily, 2 ppm on several days during 1960-63.
Sediment loads: Maximum daily, 13,400 tons Mar. 10, 1964; minimum daily, less than 0.05 ton on several days during October and December 1960, October to December 1963.
REMARKS.--Flow affected by ice Jan. 16, 17, 29-31, Feb. 1-4, 22.

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 1100 and 1600)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	65	66	--	--	60	59	59	58	55	--	--	57	--	--	61	63	--	--	57	54	--	--	--	--	--	58	58	59	56	58	--	--
November	--	61	62	61	59	57	--	--	50	51	--	58	58	--	--	60	--	53	50	43	--	--	44	45	45	--	49	--	--	38	--	--
December	36	38	40	39	--	--	--	36	35	37	38	45	--	41	34	36	36	--	--	--	--	--	--	44	--	--	--	39	41	48	42	--
January	--	--	--	39	38	41	--	41	--	--	38	38	36	33	--	--	--	--	--	--	--	--	--	35	39	42	34	34	--	--	--	--
February	--	--	--	--	--	--	--	34	38	39	39	43	--	--	38	39	41	40	36	--	--	--	33	34	32	32	--	--	--	--	--	--
March	40	41	39	45	39	34	--	39	39	39	36	38	--	--	--	45	42	41	37	--	--	42	40	36	37	38	--	--	48	--	44	--
April	46	43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
July	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	73	--	--	--	--	--	--	--	--	--	--
August	--	--	--	--	--	--	75	75	--	--	77	--	--	--	--	--	78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
September	--	--	--	--	--	--	--	--	--	--	--	--	--	--	71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

SCIOTO RIVER BASIN--Continued

3-2290. ALUM CREEK AT COLUMBUS, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	3.8	54	0.6	3.7	15	0.1	11	17	0.5
2..	4.6	80	1.0	3.9	15	.2	11	16	.5
3..	4.1	48	.5	4.8	22	.3	26	100	A 7
4..	3.7	31	.3	5.3	27	.4	63	50	A 9
5..	3.9	29	.3	5.0	44	.6	28	--	2
6..	5.5	40	.6	5.4	35	.5	44	--	5
7..	3.8	38	.4	4.8	26	.3	28	37	2.8
8..	3.6	48	.5	5.1	23	.3	20	23	1.2
9..	3.8	55	.6	5.8	18	.3	18	13	.6
10..	4.1	55	.6	6.1	21	.3	17	12	.6
11..	2.6	54	.4	6.1	25	.4	91	82	S 27
12..	2.5	53	.4	6.1	34	.6	109	--	35
13..	5.8	52	.8	6.5	62	1.1	91	36	8.8
14..	4.8	51	.7	6.1	42	.7	66	27	4.8
15..	5.1	50	.7	4.0	27	.3	39	17	1.8
16..	4.2	48	.5	15	--	3	25	9	.6
17..	3.9	45	.5	9.8	33	.9	19	8	.4
18..	6.0	48	.8	8.4	11	.2	21	8	.5
19..	11	59	1.8	16	91	S 5.6	15	8	.3
20..	13	66	2.3	15	20	.8	15	8	.3
21..	9.7	58	1.5	12	6	.2	14	9	.3
22..	7.2	47	.9	9.8	6	.2	14	8	.3
23..	6.6	41	.7	9.3	6	.2	14	8	.3
24..	5.7	40	.6	9.3	4	.1	17	--	1
25..	6.0	38	.6	25	86	S 7.9	53	--	6
26..	6.2	35	.6	18	20	1.0	119	--	35
27..	6.8	17	.3	11	12	.4	104	26	7.3
28..	7.8	10	.2	12	12	.4	70	22	4.2
29..	13	50	A 2	12	13	.4	43	19	2.2
30..	7.5	19	.4	13	18	.6	31	18	1.5
31..	4.6	17	.2	--	--	--	23	16	1.0
Total	180.9	--	22.3	274.3	--	28.3	1259	--	167.8

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	35	18	1.7	40	16	1.7	551	98	146
2..	67	26	4.7	36	15	1.5	533	81	117
3..	99	35	9.3	32	14	1.2	556	65	98
4..	131	40	14	24	14	.9	594	110	S 216
5..	72	26	5.1	17	14	.6	1520	386	1580
6..	50	19	2.6	19	15	.8	736	128	S 270
7..	44	12	1.4	128	28	S 11	562	58	88
8..	40	12	1.3	286	94	73	495	39	52
9..	50	12	1.6	522	250	A 350	352	37	35
10..	86	25	A 6	1250	480	1620	284	28	21
11..	100	28	7.6	67[illegible]	--	320	215	20	12
12..	132	12	4.3	1940	652	3420	172	18	8.4
13..	46	16	2.0	857	155	S 433	152	18	7.4
14..	39	18	1.9	326	69	61	142	18	6.9
15..	27	17	1.2	200	53	29	137	29	11
16..	24	18	1.2	162	38	17	128	45	16
17..	20	18	1.0	142	30	12	149	51	21
18..	19	18	.9	139	32	12	272	145	S 115
19..	20	17	.9	132	30	11	191	180	93
20..	19	15	.8	112	26	7.9	128	117	40
21..	19	15	.8	108	26	7.6	102	98	27
22..	22	15	.9	100	26	7.0	87	82	19
23..	113	--	11	88	22	5.2	152	86	S 57
24..	1070	941	S 3280	106	28	8.0	869	359	842
25..	742	211	429	397	137	147	415	115	S 137
26..	386	127	132	446	148	178	283	48	37
27..	435	95	112	267	36	26	201	27	15
28..	199	82	44	289	27	21	159	23	9.9
29..	110	29	8.6	--	--	--	286	--	70
30..	70	21	4.0	--	--	--	364	--	110
31..	48	17	2.2	--	--	--	202	77	42
Total	4334	--	4094.0	8838	--	6783.4	10989	--	4319.6

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.

SCIOTO RIVER BASIN--Continued

3-2290. ALUM CREEK AT COLUMBUS, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	155	104	44	109	26	7.7	28	23	1.7
2..	158	58	25	92	26	6.5	52	28	S 4.8
3..	142	37	14	77	23	4.8	76	32	6.6
4..	126	33	11	65	17	3.0	37	40	4.0
5..	115	32	9.9	63	13	2.2	26	24	1.7
6..	356	--	100	61	13	2.1	42	646	S 131
7..	1190	--	1800	47	13	1.6	42	159	S 21
8..	654	--	500	38	13	1.3	41	117	S 16
9..	2460	750	A 5000	31	13	1.1	41	53	5.9
10..	724	203	S 434	32	13	1.1	30	61	4.9
11..	812	585	S 1870	37	13	1.3	43	57	6.6
12..	1520	563	2310	42	11	1.2	43	57	6.6
13..	642	264	458	38	11	1.1	38	61	6.3
14..	273	148	109	30	10	.8	30	60	4.9
15..	296	79	63	25	9	.6	23	63	3.9
16..	385	73	76	77	--	110	6.8	70	1.3
17..	227	42	26	41	55	A 6	14	67	2.5
18..	173	35	16	17	18	.8	27	62	4.5
19..	148	28	11	14	12	.5	23	59	3.7
20..	133	25	9.0	13	10	.4	19	54	2.8
21..	120	25	8.1	11	15	.4	16	45	1.9
22..	119	26	8.4	30	--	16	15	41	1.7
23..	284	170	A 130	100	--	65	22	41	2.4
24..	734	250	A 500	57	100	A 15	13	37	1.3
25..	1720	442	S 2310	31	43	S 3.9	10	41	1.1
26..	1410	222	S 947	120	268	S 296	9.1	46	1.1
27..	489	80	106	111	282	S 92	8.2	43	1.0
28..	263	42	30	49	48	6.4	7.5	34	.7
29..	173	27	13	47	26	3.3	8.3	27	.6
30..	130	26	9.1	39	23	2.4	8.8	39	.9
31..	--	--	--	29	23	1.8	--	--	--
Total	16131	--	16947.5	1573	--	656.3	799.7	--	253.4

Day	JULY			AUGUST			SEPTEMBER		
1..	8.3	46	1.0	43	--	25	130	--	20
2..	11	58	1.7	15	35	1.4	82	35	7.7
3..	16	58	2.5	7.2	32	.6	63	31	5.3
4..	8.5	44	1.0	4.6	32	.4	56	25	3.8
5..	23	--	10	5.9	64	1.0	75	--	6
6..	1.7	46	.2	4.9	82	1.1	66	22	3.9
7..	11	45	1.3	35	117	S 16	61	22	3.6
8..	9.1	75	1.8	29	45	3.5	65	23	4.0
9..	63	180	A 30	18	44	2.1	69	23	4.3
10..	49	--	13	49	51	6.7	62	23	3.9
11..	21	--	4	19	43	2.2	106	--	12
12..	13	80	2.8	7.7	44	.9	326	--	100
13..	11	107	3.2	3.7	38	.4	195	37	19
14..	8.9	98	2.4	2.0	30	.2	173	31	14
15..	7.8	86	1.8	1.0	27	.1	410	--	220
16..	8.7	77	1.8	1.0	25	.1	146	43	17
17..	9.0	73	1.8	67	--	45	80	32	6.9
18..	7.5	78	1.6	73	--	35	40	29	3.1
19..	5.9	92	1.5	49	37	4.9	32	28	2.4
20..	5.6	97	1.5	16	23	1.0	23	25	1.6
21..	4.7	101	1.3	19	23	1.2	21	25	1.4
22..	9.5	160	A 4	13	28	1.0	21	25	1.4
23..	70	--	35	8.7	34	.8	31	23	1.9
24..	61	92	15	7.5	34	.7	23	23	1.4
25..	59	102	16	56	--	20	17	21	1.0
26..	24	153	9.9	67	22	4.0	7.3	20	.4
27..	18	143	6.9	57	25	3.8	5.4	20	.3
28..	12	67	2.2	45	23	2.8	3.6	20	.2
29..	9.7	34	.9	39	20	2.1	2.6	20	.1
30..	6.4	29	.5	35	20	1.9	32	25	2.2
31..	4.0	31	.3	49	--	4	--	--	--
Total	577.3	--	176.9	847.2	--	189.9	2423.9	--	468.8

Total discharge for year (cfs-days)..........48227.3
Total load for year (tons)..........34108.2

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.

SCIOTO RIVER BASIN--Continued

3-2290. ALUM CREEK AT COLUMBUS, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Jan. 24, 1965	1120			1150	1850		38	50	65	80	92	97	99	100				SBWC
Feb. 10	0815			1460	368		37	49	63	81	90	96	99	100				SBWC
Feb. 12	0830			2300	1040		35	48	60	75	86	93	98	100				SBWC
Feb. 12	0830			2300	1040		35	44	61	79	86	91	97	99	100			SBN
Apr. 11	1605			1400	1340		48	59	73	88	94	99	100	--				SBWC
June 6	1600			58	3650		45	59	73	86	99	100	--	--				SBWC
Aug. 7	1345			100	370		51	66	78	92	97	100	--	--				SBWC

SCIOTO RIVER BASIN--Continued

3-2296. SCIOTO RIVER BELOW SHADEVILLE, OHIO

LOCATION.--On left bank at Picway Plant of Columbus and Southern Ohio Electric Company, about 0.4 mile downstream from Big Walnut Creek, and 0.8 mile downstream from Shadeville, Pickaway County.
DRAINAGE AREA.--2,265 square miles.
RECORDS AVAILABLE.--Chemical analyses: March to September 1965.
Water temperatures: March to September 1965.
EXTREMES, March to September 1965.--Specific conductance: Maximum daily, 970 micromhos June 27-29, July 3; minimum daily, 250 micromhos Apr. 12.
Dissolved oxygen: Maximum daily, 9.1 ppm May 9; minimum daily, 0.0 ppm May 27.
Water temperatures: Maximum, 92°F Aug. 16.
REMARKS.--Recorder probe located in good flow in river.

Specific conductance, dissolved oxygen, and water temperatures, March to September 1965

Day	FEBRUARY								MARCH							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..									--	--					--	--
2..									--	--					--	--
3..									--	--					--	--
4..									--	--					--	--
5..									--	--					--	--
6..									--	--					--	--
7..									--	--					--	--
8..									--	--					--	--
9..									--	--					--	--
10..									--	--					--	--
11..									--	--					--	--
12..									--	--					--	--
13..									--	--					--	--
14..									--	--					--	--
15..									--	--					--	--
16..									--	--					--	--
17..									--	--					--	--
18..									650	620					44	42
19..									650	620					42	38
20..									640	620					39	37
21..									660	640					38	36
22..									660	630					43	41
23..									700	660					43	41
24..									670	550					41	38
25..									550	500					38	37
26..									570	530					38	37
27..									590	570					41	36
28..									610	590					44	38
29..									620	590					45	43
30..									600	550					47	44
31..									570	540					45	42

Day	APRIL								MAY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	570	550					45	42	--	--			--	--	--	--
2..	590	560					44	43	--	--			--	--	--	--
3..	600	580					46	41	--	--			--	--	--	--
4..	610	590					47	42	630	610			5.4	4.4	70	65
5..	630	610					48	45	650	630			5.7	3.6	72	67
6..	640	530					53	48	680	640			4.3	1.9	74	68
7..	530	420					54	53	690	670			4.8	2.3	73	69
8..	480	390					53	51	710	670			5.9	1.8	75	69
9..	470	260					53	51	730	670			9.1	2.2	76	71
10..	390	300					51	48	720	670			8.2	2.3	75	70
11..	440	390					53	49	740	680			7.5	2.5	73	68
12..	410	250					57	52	740	690			8.2	3.1	72	68
13..	400	300					55	50	750	700			8.4	3.1	73	68
14..	470	400					52	49	740	700			7.2	3.0	72	67
15..	490	470					52	51	780	710			4.9	2.2	73	68
16..	490	460					52	49	780	730			4.8	1.6	74	70
17..	490	460					53	48	760	620			3.1	.2	73	69
18..	520	490					54	50	690	650			2.6	1.6	73	68
19..	540	510					56	50	770	670			2.4	1.1	74	69
20..	580	540					58	52	780	720			2.7	1.2	72	69
21..	600	580					60	56	800	750			7.1	2.2	73	68
22..	630	580					62	57	810	770			5.8	2.4	76	69
23..	630	610					62	58	810	780			2.5	.7	--	--
24..	640	410					61	55	--	--			--	--	--	--
25..	410	290					55	52	--	--			--	--	--	--
26..	360	270					53	52	800	690			4.0	.2	78	72
27..	440	360					53	52	800	480			2.2	.0	79	75
28..	450	440					54	51	650	480			2.1	1.1	75	71
29..	--	--					--	--	680	540			1.1	.6	73	68
30..	--	--					--	--	600	540			2.7	1.1	73	70
31..	--	--					--	--	670	600			4.6	2.3	73	68

SCIOTO RIVER BASIN--Continued

3-2296. SCIOTO RIVER BELOW SHADEVILLE, OHIO--Continued

Specific conductance, dissolved oxygen, and water temperatures, March to September 1965--Continued

Day	JUNE								JULY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	690	660			5.4	2.4	74	70	940	900			4.8	0.4	78	74
2..	720	650			3.0	1.7	71	70	950	910			3.7	.9	77	73
3..	720	640			4.3	.7	73	70	970	930			4.5	1.0	78	73
4..	730	650			5.7	2.1	74	68	950	860			4.7	1.0	79	74
5..	760	720			6.8	2.2	75	70	880	830			4.6	1.3	78	76
6..	790	690			4.9	1.5	76	73	840	780			6.6	1.2	79	74
7..	690	470			4.9	1.3	74	71	820	750			4.9	1.4	79	76
8..	620	480			2.3	1.2	74	70	890	820			4.0	1.0	80	75
9..	630	580			2.2	1.1	77	72	890	830			3.1	.9	80	75
10..	710	630			1.9	1.1	78	75	920	700			2.3	.3	78	76
11..	730	690			2.1	.9	78	75	710	640			2.7	1.2	79	74
12..	750	730			2.9	1.0	81	77	770	670			3.9	.8	80	74
13..	770	740			3.1	.9	81	77	840	770			6.5	1.1	80	74
14..	750	710			3.9	1.1	81	75	840	790			6.7	1.5	82	77
15..	760	700			4.4	1.2	75	71	920	840			6.6	1.2	82	78
16..	790	740			4.5	1.3	76	71	920	890			5.3	1.0	80	76
17..	880	790			5.3	1.6	75	72	910	880			2.5	.9	79	76
18..	910	880			5.4	1.6	73	68	920	880			2.7	.7	79	75
19..	910	890			5.8	1.6	75	69	910	860			2.7	.8	79	75
20..	920	880			5.8	1.6	76	70	860	810			2.9	.7	78	73
21..	940	900			4.6	1.5	79	72	890	840			2.9	.7	78	72
22..	940	890			4.1	1.2	79	73	900	800			2.6	.6	79	74
23..	940	880			3.5	1.1	81	75	810	510			1.6	.4	79	76
24..	940	870			4.4	.8	78	74	710	510			1.9	.8	83	78
25..	930	880			4.6	1.1	77	72	790	700			2.3	.7	82	80
26..	950	920			4.3	1.0	77	71	730	600			4.1	1.0	83	77
27..	970	940			3.8	1.1	79	74	770	670			3.0	.8	81	78
28..	970	940			4.4	.9	81	75	840	770			2.9	.7	81	76
29..	970	930			2.4	.7	83	77	830	820			2.2	.7	80	75
30..	940	910			3.9	.6	82	78	870	820			1.6	.4	77	73
31..	--	--			--	--	--	--	880	840			1.8	.6	76	73

Day	AUGUST								SEPTEMBER							
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	870	830			1.2	0.4	76	73	820	520			2.5	0.8	71	69
2..	880	650			2.4	.4	75	74	580	490			2.7	2.5	71	67
3..	710	620			2.5	.8	75	70	720	520			2.7	2.4	72	68
4..	800	710			1.9	.7	73	69	760	700			2.7	2.0	75	70
5..	830	800			2.4	.7	76	71	790	730			2.4	1.4	75	72
6..	820	700			2.2	.8	83	74	790	620			2.6	1.4	72	70
7..	830	710			1.4	.7	82	76	670	620			2.6	2.0	79	70
8..	770	570			1.6	.5	76	75	740	670			2.5	2.0	76	72
9..	650	590			1.9	.8	78	75	790	740			2.4	1.4	84	74
10..	650	610			1.6	.8	77	74	830	760			2.0	1.4	85	75
11..	720	630			1.7	1.0	75	70	830	790			2.0	1.0	78	72
12..	780	720			1.9	.9	77	72	820	390			3.7	1.4	72	67
13..	810	780			1.7	.8	83	73	500	410			3.7	2.7	70	67
14..	820	780			1.6	.6	80	75	620	500			2.8	2.6	71	69
15..	850	800			1.8	.6	81	76	630	370			4.1	2.5	71	68
16..	870	800			1.9	.6	92	79	520	370			4.1	2.9	68	67
17..	830	770			1.3	.5	87	79	600	520			3.0	2.8	71	67
18..	840	600			1.7	.3	82	79	690	590			2.9	2.7	74	70
19..	720	530			.9	.4	81	79	720	690			2.9	2.6	77	73
20..	670	560			1.5	.6	80	76	740	590			2.7	2.5	81	74
21..	740	670			1.6	.6	78	74	770	590			2.7	2.5	81	73
22..	780	720			1.4	.6	78	75	820	760			2.7	2.0	81	74
23..	800	730			1.3	.6	86	75	850	800			2.5	2.0	76	73
24..	770	720			1.3	.6	85	75	830	690			2.6	2.0	73	68
25..	880	730			1.2	.5	79	73	780	720			2.8	2.4	68	65
26..	730	590			1.4	.4	78	75	840	780			2.9	2.5	68	65
27..	690	610			.9	.6	77	76	880	810			2.9	2.4	68	64
28..	720	660			.9	.5	77	72	890	820			3.0	2.4	67	64
29..	740	660			1.0	.6	72	68	920	840			2.9	2.4	70	65
30..	780	740			.9	.6	71	68	960	900			2.6	2.0	69	66
31..	800	750			.8	.6	70	69	--	--			--	--	--	--

SCIOTO RIVER BASIN--Continued

3-2315. SCIOTO RIVER AT CHILLICOTHE, OHIO

LOCATION.--At center of Bridge Street Bridge on U.S. Highway 23 at north end of Chillicothe, Ross County, 450 feet upstream from gaging station.
DRAINAGE AREA.--3,849 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951, May to September 1965.
Water temperatures: October 1950 to September 1951, October 1953 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 83°F Aug. 16-18; minimum, freesing point Jan. 30 to Feb. 8.
EXTREMES, 1950-51, 1953-65.--Water temperatures: Maximum, 89°F July 14, 1954, Aug. 2, 3, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Thermograph discontinued May 27, digital recorder installed May 28 to record specific conductance, dissolved oxygen, and temperatures. Temperature recorder located at gaging station, which is 450 feet downstream from Bridge Street Bridge.

Specific conductance, diesolved oxygen, temperatures, May to September 1965

Day	APRIL								MAY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1													--	--	--	--
2													--	--	--	--
3													--	--	--	--
4													--	--	--	--
5													--	--	--	--
6													--	--	--	--
7													--	--	--	--
8													--	--	--	--
9													--	--	--	--
10													--	--	--	--
11													--	--	--	--
12													--	--	--	--
13													--	--	--	--
14													--	--	--	--
15													--	--	--	--
16													--	--	--	--
17													--	--	--	--
18													--	--	--	--
19													--	--	--	--
20													--	--	--	--
21													--	--	--	--
22													--	--	--	--
23													--	--	--	--
24													--	--	--	--
25													--	--	--	--
26													--	--	--	--
27													--	--	--	--
28													--	--	--	--
29													4.9	2.2	72	69
30													6.1	1.6	70	67
31													4.2	2.2	70	65

SCIOTO RIVER BASIN--Continued

3-2315. SCIOTO RIVER AT CHILLICOTHE, OHIO--Continued

Specific conductance, dissolved oxygen, temperatures, May to September 1965--Continued

Day	JUNE								JULY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1					5.5	2.0	71	66	--	--			--	--	--	--
2					7.7	2.4	72	69	--	--			--	--	--	--
3					5.6	2.2	71	68	--	--			--	--	--	--
4					6.6	1.9	73	67	--	--			--	--	--	--
5					4.7	2.0	74	69	--	--			--	--	--	--
6					5.5	1.5	74	71	--	--			--	--	--	--
7					4.4	1.8	73	71	--	--			--	--	--	--
8					3.4	1.9	75	71	--	--			--	--	--	--
9					3.1	1.7	75	71	--	--			2.5	0.9	79	76
10					2.1	1.5	75	72	--	--			1.1	.3	76	73
11					2.8	1.6	78	73	--	--			.6	.0	76	71
12					5.8	1.8	79	74	--	--			2.0	.6	78	73
13					--	2.1	79	74	--	--			6.5	1.0	79	74
14					--	--	--	--	--	--			10.0	2.9	81	76
15					--	--	--	--	700	690			3.4	.8	81	77
16					--	--	--	--	690	680			3.6	.5	81	76
17					--	--	--	--	680	680			2.4	.7	79	76
18					--	--	--	--	700	680			2.9	.3	78	74
19					--	--	--	--	740	700			2.6	.4	80	74
20					--	--	--	--	750	740			4.2	1.0	78	74
21					--	--	--	--	790	750			3.8	1.8	78	73
22					--	--	--	--	820	790			2.9	.9	78	73
23					--	--	--	--	800	680			2.9	1.0	79	76
24					--	--	--	--	700	570			2.3	.6	81	76
25					--	--	--	--	670	620			2.2	.8	82	78
26					--	--	--	--	710	670			3.4	.7	81	77
27					--	--	--	--	650	600			6.0	1.9	80	76
28					--	--	--	--	600	580			6.8	1.9	79	75
29					--	--	--	--	650	580			7.3	2.4	78	74
30					--	--	--	--	710	650			8.8	2.7	78	73
31					--	--	--	--	--	--			5.2	1.9	75	72

Day	AUGUST								SEPTEMBER							
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	--	--			3.3	1.0	75	72	600	320			4.6	3.1	69	67
2	--	--			3.4	.8	75	71	680	360			4.3	3.1	69	66
3	--	--			3.1	1.5	75	70	710	680			3.9	3.2	71	67
4	--	--			2.1	.2	72	70	680	560			4.8	3.1	72	68
5	--	--						70	570	550			4.5	3.3	71	69
6	--	--			3.8	--	--	--	570	540			4.5	3.3	71	68
7	810	580			3.7	1.0	78	75	590	550			4.9	3.4	73	69
8	640	440			2.1	.9	75	74	690	590			5.4	3.4	75	71
9	640	550			2.5	1.4	76	73	720	660			5.0	3.5	77	72
10	650	610			3.5	2.2	75	73	730	710			4.5	2.9	78	73
11	690	650			4.4	2.4	75	71	720	700			3.5	2.8	76	72
12	650	610			5.4	2.9	76	71	700	360			5.7	2.5	72	67
13	610	600			5.3	2.7	76	72	650	340			4.3	1.6	70	67
14	660	610			4.1	2.3	79	74	440	390			4.6	3.8	69	66
15	700	660			3.4	1.8	81	76	520	440			4.8	3.6	71	68
16	710	690			3.6	1.3	83	78	520	360			5.0	2.9	69	66
17	720	700			3.9	1.7	83	79	470	360			5.4	5.0	68	65
18	760	690			3.9	1.8	82	78	550	470			5.1	4.8	71	67
19	790	740			2.8	1.7	80	79	600	550			5.8	5.0	73	69
20	820	730			4.6	1.6	81	78	650	600			5.8	5.3	75	72
21	740	630			7.8	2.2	78	75	690	650			6.2	4.9	76	72
22	680	650			5.3	2.6	79	75	720	690			6.4	4.9	76	73
23	690	660			4.6	2.3	78	75	730	680			5.7	4.9	75	72
24	660	630			3.1	1.7	78	74	740	720			5.8	4.4	72	68
25	670	630			2.9	1.6	78	73	730	700			6.0	4.5	68	66
26	720	660			3.4	1.4	78	74	740	720			6.4	4.9	66	64
27	770	720			3.7	1.0	77	75	740	700			7.0	5.0	65	63
28	770	750			4.9	1.9	76	72	700	690			7.5	5.8	65	61
29	800	750			5.1	2.7	73	70	730	690			8.2	6.4	65	62
30	790	660			5.1	2.8	71	69	740	710			7.5	5.9	65	63
31	710	600			4.7	3.3	69	67	--	--			--	--	--	--

SCIOTO RIVER BASIN--Continued

3-2315. SCIOTO RIVER AT CHILLICOTHE, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	65	66	66	66	64	61	60	59	58	56	56	55	56	57	57	58	59	59	59	58	55	54	53	52	52	52	53	55	56	56	55	58
Minimum	62	64	64	64	61	58	56	56	56	54	52	52	53	54	55	56	56	57	57	55	53	51	51	50	49	50	51	53	54	54	53	55
November																																
Maximum	54	55	56	56	56	56	55	52	51	51	53	53	54	54	53	54	54	53	53	51	48	44	42	42	43	44	45	45	45	45	--	51
Minimum	53	53	54	54	55	54	52	51	50	50	51	52	53	52	51	53	53	52	51	48	44	42	41	41	42	43	43	44	45	41	--	49
December																																
Maximum	41	39	39	40	40	41	41	40	40	40	40	43	44	44	42	41	40	40	38	37	38	38	41	44	45	45	46	46	44	45	45	42
Minimum	39	39	39	39	40	40	40	40	40	39	39	40	43	42	40	39	39	38	37	37	37	38	38	41	44	45	45	44	44	44	45	40
January																																
Maximum	45	45	45	44	43	41	42	44	45	45	43	42	41	40	38	37	35	35	34	33	33	33	36	38	39	37	37	36	34	33	32	39
Minimum	45	45	44	43	41	41	41	42	44	43	42	40	40	38	37	35	35	34	33	33	33	33	33	36	37	36	36	34	33	32	32	38
February																																
Maximum	32	32	32	32	32	32	32	35	36	38	40	41	41	40	38	39	40	41	41	40	39	39	37	37	37	37	36	36	--	--	--	37
Minimum	32	32	32	32	32	32	32	32	35	36	38	40	40	38	38	38	39	40	40	39	39	37	36	36	37	36	35	35	--	--	--	36
March																																
Maximum	37	39	40	40	40	39	38	39	39	39	39	39	40	40	41	42	42	43	43	42	40	40	41	41	41	40	39	41	44	45	45	41
Minimum	36	37	39	40	39	38	38	38	39	39	39	38	38	39	40	41	42	42	42	40	39	38	40	41	40	39	39	39	41	44	44	40
April																																
Maximum	44	44	44	45	46	49	53	53	52	52	53	54	54	54	52	52	51	52	53	54	57	60	60	60	58	54	53	53	54	55	--	52
Minimum	43	43	43	44	45	46	49	52	52	52	52	53	54	52	52	51	50	51	52	53	54	57	60	58	54	53	53	53	53	53	--	51
May																																
Maximum	59	61	63	65	66	68	68	70	71	70	70	68	68	68	68	68	70	70	69	69	66	70	72	73	73	74	74	--	--	--	--	69
Minimum	55	59	61	63	64	65	66	66	67	69	68	66	65	65	65	66	66	67	67	66	65	65	68	69	71	71	72	--	--	--	--	66

SCIOTO RIVER BASIN--Continued

3-2345. SCIOTO RIVER AT HIGBY, OHIO

LOCATION.--At gaging station at highway bridge, 0.8 mile downstream from Walnut Creek, and 1.2 miles north of Higby, Ross County.
DRAINAGE AREA.--5,131 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1953 to September 1965.
Sediment records: October 1953 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum 88°F Aug. 16, 17; minimum, freezing point on several days during December to February.
Sediment concentrations: Maximum daily, 1,660 ppm Apr. 9; minimum daily, 2 ppm Oct. 17, 29.
Sediment loads: Maximum daily, 95,900 tons Apr. 12; minimum daily, 2 tons Oct. 17, 29.
EXTREMES, 1953-65.--Water temperatures: Maximum, 90°F July 25, Aug. 2, 1964; minimum, freezing point on many days during winter months.
Sediment concentrations: Maximum daily, 2,130 ppm July 21, 1954; minimum daily, 1 ppm on several days during 1955 and 1956.
Sediment loads: Maximum daily, 550,000 tons Jan. 23, 1959; minimum daily, 1 ton on several days during 1955 and 1956.
REMARKS.--Flow slightly regulated by O'Shaughnessy, Griggs, Delaware, Hoover, and Rocky Fork Reservoirs.

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 1430 and 1830)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	--	70	71	65	61	60	61	62	56	54	58	56	66	--	67	63	64	62	60	55	55	56	54	53	57	56	56	62	60	60	58	60
November	56	55	55	55	55	58	55	56	56	57	56	60	59	--	60	57	58	55	54	52	43	40	52	52	59	50	50	50	51	43	--	54
December	34	42	44	--	--	--	44	--	43	40	51	47	42	44	34	42	--	32	34	36	39	42	48	53	48	47	44	42	49	48	45	43
January	50	45	45	42	44	42	42	44	--	44	40	40	40	35	36	34	32	--	--	36	--	39	46	--	--	--	36	33	32	32	31	--
February	32	32	33	--	32	32	40	39	41	46	44	44	42	38	--	42	--	44	38	40	39	36	37	38	32	--	40	41	--	--	--	38
March	45	44	48	43	38	40	40	42	--	38	40	42	44	42	--	45	47	45	40	38	38	44	45	42	40	38	--	46	45	46	46	43
April	--	46	49	54	55	56	--	56	54	55	56	58	--	53	--	54	57	55	--	60	61	--	60	--	57	56	54	54	--	58	--	--
May	65	68	69	72	--	--	--	73	--	73	74	--	70	--	70	72	--	--	73	--	--	--	75	73	74	78	76	74	69	75	74	--
June	--	74	74	77	76	78	--	--	--	--	--	--	--	--	--	71	--	--	--	--	--	--	71	68	--	--	--	80	85	--	--	--
July	--	--	--	75	78	78	--	--	80	--	--	--	--	--	--	85	--	--	80	--	--	--	--	--	--	--	--	--	78	79	76	--
August	--	74	76	78	--	--	--	76	--	--	--	--	--	82	--	88	88	87	--	--	78	78	--	--	80	--	82	77	--	70	72	--
September	70	70	74	70	--	--	77	80	--	82	77	--	--	74	--	--	80	78	--	81	78	--	70	60	66	--	64	--	64	--	--	--

SCIOTO RIVER BASIN--Continued

3-2345. SCIOTO RIVER AT HIGBY, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	402	6	7	356	4	4	737	16	32
2..	390	9	9	346	5	5	710	18	35
3..	382	10	10	346	4	4	746	12	24
4..	370	7	7	346	10	9	791	11	23
5..	370	7	7	455	14	17	1200	17	55
6..	356	10	10	495	16	21	1150	16	50
7..	349	10	9	512	26	36	860	16	37
8..	356	7	7	460	27	34	694	19	36
9..	356	8	8	398	13	14	646	19	33
10..	353	6	6	374	8	8	595	19	31
11..	353	8	8	410	12	13	694	45	S 91
12..	346	10	9	500	15	20	2070	180	1010
13..	342	9	8	542	14	20	2390	120	774
14..	346	9	8	536	13	19	1640	42	186
15..	353	9	9	542	15	22	1250	29	98
16..	356	5	5	567	12	18	1070	22	64
17..	356	2	2	554	10	15	1190	32	103
18..	353	5	5	512	11	15	911	30	74
19..	346	7	7	506	11	15	755	22	45
20..	342	7	6	506	13	18	678	15	27
21..	342	5	5	560	12	18	646	14	24
22..	339	4	4	524	10	14	588	13	21
23..	335	5	5	480	14	18	542	8	12
24..	346	5	5	485	18	24	518	8	11
25..	346	4	4	567	17	26	1130	199	S 695
26..	342	6	6	694	16	30	2370	259	S 1900
27..	335	11	10	890	19	46	2710	276	2020
28..	332	7	6	810	10	22	2090	137	773
29..	356	2	2	755	10	20	1640	62	275
30..	356	4	4	791	13	28	1510	37	151
31..	363	5	5	--	--	--	1410	37	141
Total	10969	--	203	15819	--	573	35931	--	8851

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	1280	41	142	1920	31	161	7050	95	1810
2..	3340	410	S 4540	1760	26	124	8210	100	2220
3..	4820	622	8090	1590	24	103	11800	294	9370
4..	3450	187	1740	1500	20	81	13200	225	8020
5..	2590	79	552	1400	17	64	17800	361	17300
6..	2360	50	319	1470	15	60	19500	350	18400
7..	2150	44	255	2340	--	E 1100	18800	242	12300
8..	1840	40	199	5220	410	5780	16200	135	5900
9..	1720	34	158	6670	260	4680	13600	106	3890
10..	1850	27	135	10700	439	12700	11200	87	2630
11..	1950	28	147	14500	540	21100	9200	80	1990
12..	1850	31	155	16400	570	25200	7320	59	1170
13..	1810	26	127	18600	597	30000	6120	65	1070
14..	1820	37	182	18800	204	10400	5200	59	828
15..	1580	31	132	13100	120	4240	4720	46	586
16..	1410	29	110	7720	104	2170	4390	38	450
17..	1230	26	86	5590	115	1740	5380	310	A 4500
18..	1150	24	75	4770	92	1180	10400	700	A 20000
19..	999	24	65	4090	71	784	8690	138	3240
20..	977	19	50	3610	115	1120	6330	57	974
21..	860	18	42	3300	66	588	5010	67	906
22..	820	20	44	2980	46	370	4230	56	640
23..	860	26	60	2580	47	327	3720	50	502
24..	1630	55	S 304	2310	47	293	4740	113	S 1610
25..	5600	440	S 7190	3720	79	793	9160	235	5810
26..	8650	460	10700	5350	163	2350	10400	95	2670
27..	7810	176	3710	6180	197	3290	8920	61	1470
28..	6420	104	1800	6880	140	2600	6520	45	792
29..	4630	74	925	--	--	--	6230	60	1010
30..	3250	49	430	--	--	--	6960	83	1560
31..	2410	35	228	--	--	--	6880	65	1210
Total	83116	--	42692	175050	--	133398	277880	--	134828

E Estimated.
S Computed by subdividing day.
A Computed from partly estimated-concentration graph.

SCIOTO RIVER BASIN--Continued

3-2345. SCIOTO RIVER AT HIGBY, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965--Continued

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	6520	65	1140	7450	90	1810	1350	16	58
2..	5970	58	935	5860	74	1170	1310	13	46
3..	5100	42	578	4890	58	766	1280	13	45
4..	4420	30	358	4120	53	590	1390	11	41
5..	4140	23	257	3630	43	421	1280	11	38
6..	5250	445	S 7660	3300	31	276	1190	11	35
7..	10100	468	12800	3030	32	262	1180	14	45
8..	13000	245	8600	2820	41	312	1820	42	206
9..	20500	1660	91900	2650	50	358	1610	19	83
10..	20000	600	32400	2490	52	350	1610	31	135
11..	25000	525	35400	2370	63	403	1500	23	93
12..	30900	1150	95900	2230	44	265	1370	23	85
13..	28600	625	48300	2080	52	292	1300	23	81
14..	25100	360	24400	1940	43	225	1180	29	92
15..	15400	215	8940	1820	38	187	1130	33	101
16..	12800	177	6120	1720	46	214	1110	24	72
17..	11300	146	4450	2890	--	E 850	1000	19	51
18..	8690	130	3050	2590	68	476	878	24	57
19..	6960	123	2310	1940	67	351	814	25	55
20..	5770	107	1670	1680	50	227	782	30	63
21..	4810	80	1040	1560	42	177	742	23	46
22..	4260	68	782	1500	45	182	697	18	34
23..	4150	79	885	1500	23	93	674	17	31
24..	4590	65	806	1700	65	298	674	17	31
25..	9660	314	S 9210	1870	58	293	667	17	31
26..	23900	951	61400	1710	29	134	638	21	36
27..	30000	275	22300	1670	31	140	609	23	38
28..	27300	219	13400	2130	41	236	574	18	28
29..	15900	156	6700	1650	36	160	560	20	30
30..	10800	116	3380	1740	67	315	602	25	41
31..	--	--	--	1580	51	218	--	--	--
Total	400890	--	507071	80110	--	12051	31521	--	1828

Day	JULY			AUGUST			SEPTEMBER		
1..	567	24	37	1030	40	111	4010	697	S 11300
2..	560	23	35	978	48	127	3920	630	6670
3..	539	21	31	1120	51	154	2620	244	1730
4..	539	20	29	1040	24	67	1740	65	305
5..	581	16	25	897	14	34	1320	31	110
6..	539	10	15	838	18	41	1100	28	83
7..	631	8	14	933	17	43	1170	36	114
8..	609	12	20	1080	23	67	1060	23	66
9..	609	22	36	1770	23	110	969	18	47
10..	970	31	81	1460	22	87	838	20	45
11..	1610	31	135	1230	19	63	798	21	45
12..	1140	17	52	1070	14	40	5610	367	S 8050
13..	862	19	44	960	19	49	11500	506	15700
14..	758	30	61	862	15	35	7640	270	5570
15..	689	24	45	790	12	26	5340	300	4330
16..	631	15	26	742	13	26	9480	700	17900
17..	581	24	38	710	11	21	8470	335	7660
18..	553	37	55	694	10	19	5750	238	3690
19..	539	39	57	1290	--	E 190	4380	210	2480
20..	518	41	57	1480	17	68	3320	175	1570
21..	484	30	39	1060	16	46	3220	129	1120
22..	484	23	30	906	25	61	2960	99	791
23..	2770	390	S 7480	1310	--	E 380	2890	94	733
24..	14300	880	34000	1100	45	134	3040	91	747
25..	7030	144	S 3020	862	35	81	3530	87	829
26..	3410	50	460	798	35	75	2770	79	591
27..	2410	44	286	1120	34	103	2330	68	428
28..	1810	51	249	969	20	52	2560	53	366
29..	1500	50	202	838	17	38	2560	49	339
30..	1290	44	153	742	18	36	1830	49	242
31..	1120	43	130	670	16	29	--	--	--
Total	50633	--	46942	31349	--	2413	108725	--	93651

Total discharge for year (cfs-days)....................1301993
Total load for year (tons).................... 984501

E Estimated.
S Computed by subdividing day.

SCIOTO RIVER BASIN--Continued

3-2345. SCIOTO RIVER AT HIGBY, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Feb. 12, 1965.......	1730			18000	851		39	46	56	68	81	90	95	99	100			SBWC
Apr. 12.............	1730			31500	957		14	36	53	70	89	93	97	100				SBWC
July 24.............	0800			13400	1210		36	64	66	80	94	97	99	100				SBWC
July 24.............	0800			13400	1210		14	26	44	64	84	87	99	100				SBN

SCIOTO RIVER BASIN--Continued

3-2371. SCIOTO RIVER AT LUCASVILLE, OHIO

LOCATION.--At bridge on State Highway 348 at Lucasville, Scioto County, 0.4 mile downstream from Miller Run, and 4.9 miles upstream from Scioto Brush Creek.
DRAINAGE AREA.-6,178 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1965.
Water temperatures: October 1956 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 979 micromhos Nov. 9; minimum daily, 261 micromhos Jan. 2.
Water temperatures: Maximum, 80°F Aug. 17; minimum, freezing point on several days during January and February.
EXTREMES, 1956-65.--Specific conductance: Maximum daily, 1,020 micromhos Dec. 22, 1963; minimum daily, 207 micromhos May 8, 1961.
Water temperatures: Maximum, 85°F July 22, 1957; minimum, freezing point on many days during winter months.
REMARKS.--Daily samples were collected at this station and samples were selected for analysis as follows: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, and (3) composite analysis of all daily samples for the month.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH
														Calcium, magnesium	Noncarbonate		
Oct. 5, 1964								288	114	50	0.7	6.2	502	322	86	802	7.8
Oct. 27								294	145	65	.9	6.3	576	348	107	928	7.8
Oct. 1-31								291	132	60	.7	7.5	554	344	105	886	7.6
Nov. 9								305	129	70	1.2	18	624	352	102	979	8.1
Nov. 20								A248	97	48	.8	11	456	274	70	722	8.4
Nov. 1-30								270	117	56	1.0	17	544	312	90	829	7.7
Dec. 1								240	107	46	.8	9.1	458	280	83	743	7.5
Dec. 27								112	67	18	.3	8.5	276	158	66	398	8.0
Dec. 1-31								180	97	42	.5	8.8	400	238	90	617	7.7
Jan. 2, 1965								63	46	13	.2	4.2	165	104	52	261	7.5
Jan. 26								194	120	58	.6	11	448	293	134	732	7.8
Jan. 1-31								176	90	38	.3	6.5	348	258	114	591	7.6
Feb. 2								208	107	27	.3	15	416	298	127	678	7.2
Feb. 26								120	58	19	.1	10	244	174	76	393	7.2
Feb. 1-2, 7-28								158	78	24	.2	16	318	232	103	515	7.2
Mar. 17								188	70	23	.3	18	330	272	118	550	8.2
Mar. 19								120	56	14	.2	14	228	172	74	369	7.4
Mar. 1-31								146	74	20	.2	16	285	219	100	467	7.7
Apr. 1								165	76	22	.2	14	317	242	107	538	7.6
Apr. 27								114	37	7.5	.1	11	199	150	56	318	7.7
Apr. 1-30								150	68	16	.1	13	272	208	85	443	7.6

May 1, 1965								B170	63	16	0.4	13	301	228	94	471	8.4
May 26								268	94	28	.4	7.2	415	321	201	673	7.9
May 1-31								236	87	23	.3	6.7	370	282	88	599	7.9
June 2								232	82	26	.2	5.6	374	286	96	610	7.6
June 28								292	104	41	.4	2.8	492	340	101	756	7.9
June 1-30								264	94	33	.3	2.6	427	319	102	684	7.8
July 7								302	111	45	.6	1.1	485	349	101	791	7.6
July 25								150	26	9.0	.2	1.2	176	150	27	341	7.3
July 1-31								245	97	37	.5	3.5	403	297	96	661	7.2
Aug. 8								268	101	45	.5	3.6	460	308	88	721	7.4
Aug. 29								174	63	28	.3	3 5	300	208	66	490	7.4
Aug. 1-31								230	86	37	.4	4.8	386	274	86	640	8.1
Sept. 13								110	33	8.0	.2	1.2	176	124	34	285	7.4
Sept. 29								238	68	22	.4	8.9	358	270	74	583	7.9
Sept. 1-30								188	57	20	.3	7.2	289	218	64	476	7.9

A Includes 5 ppm carbonate (CO_3).
B Includes 3 ppm carbonate (CO_3).

SCIOTO RIVER BASIN--Continued

3-2371. SCIOTO RIVER AT LUCASVILLE, OHIO--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement at 1030)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	852	932	743	578	639	469	538	471	630	757	583	552
2.....	871	961	713	261	678	476	527	497	610	737	599	342
3.....	858	964	735	368	--	451	513	519	648	767	637	292
4.....	804	956	624	422	--	455	513	535	634	780	655	402
5.....	802	951	711	434	--	437	523	555	639	768	646	464
6.....	812	937	642	502	--	409	525	584	664	780	665	486
7.....	841	885	651	532	672	424	452	566	681	791	708	501
8.....	871	937	707	569	395	440	452	573	685	788	721	506
9.....	865	979	711	553	438	457	471	582	684	776	657	518
10.....	858	903	723	548	435	446	366	584	675	752	704	545
11.....	860	834	733	569	455	450	376	602	681	723	588	567
12.....	896	783	401	572	432	479	327	611	621	748	606	554
13.....	827	754	488	587	487	506	333	609	600	625	632	285
14.....	903	801	489	599	467	519	345	615	632	567	637	377
15.....	892	888	546	602	475	539	392	594	643	613	639	358
16.....	873	841	614	606	462	542	397	625	664	662	626	398
17.....	881	770	596	613	476	550	412	640	689	714	646	429
18.....	894	748	609	627	497	392	446	597	700	734	648	416
19.....	903	738	651	649	515	369	430	514	707	708	655	439
20.....	922	722	651	635	541	427	458	603	718	709	609	479
21.....	919	727	692	650	565	--	483	610	706	712	639	508
22.....	879	754	699	672	573	500	502	588	724	716	694	542
23.....	888	796	716	673	571	517	519	600	727	710	710	522
24.....	883	793	730	660	586	500	421	628	718	726	512	534
25.....	888	779	585	631	443	483	481	649	730	341	607	537
26.....	914	781	448	732	393	485	415	673	728	361	558	517
27.....	928	793	398	659	492	463	318	645	751	411	553	536
28.....	917	817	465	656	489	481	355	622	756	478	573	559
29.....	888	776	515	638	--	479	419	556	748	515	490	583
30.....	919	759	566	620	--	470	455	625	742	543	604	531
31.....	896	--	594	634	--	456	--	658	--	549	636	--
Average	877	835	617	582	507	469	438	591	684	663	627	475

SCIOTO RIVER BASIN--Continued

3-2371. SCIOTO RIVER AT LUCASVILLE, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at 1030)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	61	65	64	63	60	57	--	56	57	48	51	51	52	54	55	56	57	52	53	53	53	52	51	48	47	49	51	53	56	54	52	54
November	52	53	54	54	55	52	51	52	50	50	51	54	55	52	52	54	55	55	49	50	45	40	38	47	44	42	45	46	45	42	--	49
December	38	38	40	44	44	41	38	38	38	37	40	45	45	42	38	37	--	34	36	39	35	36	39	44	42	47	44	43	43	45	44	40
January	44	46	44	41	40	40	40	44	46	42	40	39	40	37	35	34	32	32	32	33	32	34	38	40	40	41	37	36	33	32	--	38
February	--	33	--	--	--	--	34	34	35	39	42	44	43	40	36	32	33	39	40	38	--	35	35	35	36	33	32	35	--	--	--	36
March	37	40	43	44	42	40	39	39	40	40	39	38	39	39	40	41	43	44	43	42	38	38	41	41	40	40	38	39	44	45	45	41
April	45	45	43	--	46	48	52	55	55	53	54	55	54	53	52	51	51	52	53	53	56	58	60	58	57	55	53	52	52	55	--	53
May	58	60	62	63	65	67	68	67	70	71	70	68	67	67	67	69	68	69	69	69	67	67	70	72	74	75	74	72	68	68	67	68
June	69	72	70	68	72	73	73	73	73	74	76	77	74	72	72	72	69	69	69	70	72	73	75	75	73	73	74	76	77	76	--	73
July	73	72	74	76	76	76	78	77	78	76	74	75	75	78	78	77	77	77	75	74	73	74	77	78	77	77	77	76	75	72	72	76
August	73	72	70	70	72	74	76	76	74	75	73	72	73	76	77	78	80	79	77	75	74	73	75	73	75	76	75	75	68	68	68	74
September	68	65	65	68	69	70	69	71	72	74	75	70	67	67	67	68	67	68	79	71	73	75	75	70	65	62	62	60	61	63	--	69

UPPER TWIN CREEK BASIN

3-2372.8. UPPER TWIN CREEK AT McGAW, OHIO

LOCATION.--At gaging station at bridge on U.S. Highway 52 at McGaw, Scioto County, 2 miles northeast of Buena Vista, and 2.8 miles upstream from mouth.
DRAINAGE AREA.--12.8 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1965.
EXTREMES,1964-65.--Water temperatures: Maximum, 76°F June 12, 13; minimum, 33°F Jan. 19, 20, Feb. 5-8.
EXTREMES, 1963-65.--Water temperatures: Maximum, 86°F July 27, 1964; minimum, 33°F on several days in February 1964, and January and February 1965.
REMARKS.--The period Oct. 4 to Sept. 30 may not be representative of actual water temperatures due to temperature element being buried. No flow Oct. 14 to Nov. 24, Dec. 19-24.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 9, 1964...										16	39	4.5	0.2	1.0	89	47	34		131	7.1	
Oct. 27........										26	36	6.0	.1	.3	94	106	84		142	7.0	
Dec. 8.........										14	24	3.0	.1	3.4	67	34	22		95	6.7	
Dec. 11........										12	25	5.0	.1	2.3	65	33	23		96	6.8	
Jan. 2, 1965...										7	14	4.0	.1	.8	47	18	12		48	6.3	
Jan. 6.........										11	17	3.0	.1	1.8	51	25	16		70	6.7	
Jan. 21........										10	18	2.0	.0	.8	50	25	17		75	6.7	
Feb. 7.........										6	15	5.0	.0	.3	50	19	14		58	6.2	
Mar. 4.........										6	16	3.0	.0	.4	50	18	13		56	6.5	
Mar. 24........										6	17	8.0	.0	.4	44	22	17		77	6.5	
Apr. 9.........										6	16	3.0	.0	.5	32	17	12	0.0	58	6.1	
July 21........										20	31	6.0	--	.9	--	48	32		124	7.1	

UPPER TWIN CREEK BASIN--Continued

3-2372.8. UPPER TWIN CREEK AT McGAW, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	69	66	69	63	63	62	61	61	58	57	56	57	59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	58	63	59	59	55	51	50	50	51	48	46	46	49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
November																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	43	44	47	47	43	40	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	40	40	41	42	40	38	--	--
December																																
Maximum	38	38	41	44	44	44	44	41	42	42	42	44	45	45	45	45	45	45	44	--	--	--	--	--	46	45	--	--	--	--	--	--
Minimum	38	38	38	41	44	44	41	41	41	42	41	42	44	45	45	45	45	44	41	--	--	--	--	--	45	44	--	--	--	--	--	--
January																																
Maximum	--	--	44	42	42	44	43	48	48	45	40	39	39	39	36	36	36	35	34	34	36	38	38	40	40	41	41	37	36	35	34	39
Minimum	--	--	42	41	41	42	42	43	45	40	38	38	39	36	36	36	35	34	33	33	34	36	38	38	40	40	37	36	35	34	34	38
February																																
Maximum	34	34	34	34	34	33	33	38	40	43	43	45	43	40	38	38	39	40	40	39	38	37	36	36	36	36	37	41	--	--	--	38
Minimum	34	34	34	34	33	33	33	33	38	40	42	43	40	38	36	37	38	38	39	37	37	36	35	35	35	35	35	37	--	--	--	36
March																																
Maximum	43	43	43	43	42	41	41	42	41	41	41	41	40	40	41	42	42	43	43	41	39	40	42	42	41	40	41	42	43	44	44	42
Minimum	40	43	43	42	41	40	40	41	41	40	39	39	39	39	38	39	42	42	41	39	37	37	40	41	40	40	40	40	42	43	42	40
April																																
Maximum	43	43	43	44	46	48	52	52	49	47	47	48	48	48	48	48	48	48	49	50	51	53	53	53	53	53	53	53	52	53	--	49
Minimum	41	43	41	42	44	46	48	49	47	45	47	47	48	48	48	48	47	48	48	49	50	51	53	53	53	53	53	51	51	51	--	48
May																																
Maximum	56	58	60	61	61	63	65	66	67	68	68	66	67	67	67	67	69	69	67	67	67	71	73	75	75	74	74	71	68	68	70	67
Minimum	53	55	57	58	60	60	62	62	63	65	65	63	62	62	62	65	65	64	65	65	63	65	67	68	69	69	71	67	64	62	63	63
June																																
Maximum	70	70	70	70	71	71	69	69	70	71	73	76	76	73	71	68	68	68	68	69	69	70	71	71	71	69	70	71	72	72	--	71
Minimum	64	67	68	65	67	69	69	69	69	70	71	72	70	69	68	67	66	65	64	65	67	68	69	71	68	67	69	70	71	72	--	68
July																																
Maximum	72	71	71	71	72	72	72	72	72	72	73	73	73	74	75	75	74	74	74	74	73	71	71	72	74	74	74	74	74	74	73	73
Minimum	71	70	70	71	71	71	72	72	72	72	72	71	72	73	74	73	73	73	73	72	71	71	71	71	72	74	74	74	74	73	72	72
August																																
Maximum	72	71	71	70	70	71	71	71	71	71	71	71	71	72	73	74	74	74	73	73	73	72	71	71	71	71	72	72	72	71	70	72
Minimum	71	71	70	69	69	70	71	71	71	71	71	71	71	71	72	73	74	73	73	73	72	71	71	71	71	71	71	72	71	70	69	71
September																																
Maximum	69	68	67	68	68	68	70	71	72	72	72	70	68	68	68	68	70	72	72	72	73	73	72	71	67	65	63	63	64	64	--	69
Minimum	68	67	66	67	68	68	68	69	70	70	70	68	68	68	68	68	67	69	70	70	70	71	71	67	64	62	62	61	62	63	--	67

UPPER TWIN CREEK BASIN--Continued

3-2372.8. UPPER TWIN CREEK AT McGAW, OHIO--Continued

Periodic determinations of suspended-sediment discharge, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Dec. 8, 1964	0915			2.1	2	T												
Dec. 11	1200			1.5	2	T												
Jan. 2, 1965	1415			320	138	119												
Jan. 6	1340			12	2	.1												
Feb. 7	1730			72	28	5.4												
Mar. 4	0925			42	4	.5												
Mar. 24	1540			18	6	.3												
Apr. 9	1200			143	63	24												
Sept. 13	1200			24	133	8.6												
Sept. 13	1315			23	182	11												
Sept. 21	1530			1.2	2	T												

T Less than 0.50 ton.

LICKING RIVER BASIN

3-2495. LICKING RIVER AT FARMERS, KY.

LOCATION.--At gaging station near right bank at bridge on U.S. Highway 60, 300 feet upstream from Chesapeake and Ohio Railway bridge, 0.8 mile west of Farmers, Rowan County, and 1.1 miles upstream from Triplett Creek.
DRAINAGE AREA.--831 square miles.
RECORDS AVAILABLE.--Chemical analyses: September 1949 to August 1950.
Water temperatures: October 1949 to September 1965.
Sediment records: November 1960 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, not determined; minimum, 33°F Feb. 27, 28.
Sediment concentrations: Maximum daily, 1,800 ppm July 23; minimum daily, 2 ppm Oct. 29, Mar. 15, 16.
Sediment loads: Maximum daily, 20,000 tons July 23; minimum daily, less than 0.50 ton on several days during October, November, and June.
EXTREMES, 1949-65.--Water temperatures: Maximum, 92°F July 19, 1951; minimum, freezing point on many days during winter months.
Sediment concentrations (1960-65): Maximum daily, 1,800 ppm July 23, 1965; minimum daily, 1 ppm on several days during 1960-63.
Sediment loads (1960-65): Maximum daily, 29,700 tons Feb. 28, 1962; minimum daily, less than 0.50 ton on many days.
REMARKS.--Maximum water temperature for the water year probably occurred during period of missing record in August. Flow affected by ice Feb. 5.

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Non-carbonate	Potential free acidity (H^{+1})	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen: Parts per million	Dissolved oxygen: Percent saturation
May 17, 1965.	234		0.0	0.47	0.11						50	0	14	20		0.0	0.02		56	15	0.0	177	6.9	10	8.0	94

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	60	59	60	60	60	58	57	55	54	54	53	51	52	53	53	53	54	55	55	55	52	52	52	52	51	50	50	51	52	53	53	54
Minimum	59	59	59	60	58	56	54	54	54	52	51	50	51	52	53	53	53	54	55	52	51	52	52	51	50	50	50	50	51	52	52	53
November																																
Maximum	52	52	52	52	52	52	52	50	50	50	50	52	54	54	52	54	54	54	54	53	51	48	45	42	43	43	43	44	44	44	--	50
Minimum	52	52	52	52	52	52	50	50	50	49	49	50	52	52	51	52	54	54	53	50	48	45	42	41	42	43	43	43	44	43	--	49
December																																
Maximum	43	40	41	43	46	46	46	44	43	42	41	45	46	46	46	43	41	41	39	38	38	37	39	42	44	47	48	48	48	47	47	43
Minimum	40	40	40	41	43	46	44	43	42	40	40	41	45	45	43	41	41	39	38	33	37	37	37	39	42	44	47	48	47	47	47	42
January																																
Maximum	47	48	48	48	47	45	44	45	47	47	47	46	44	44	44	43	42	40	40	39	39	40	41	43	45	47	47	47	46	43	41	44
Minimum	47	47	48	47	45	44	44	44	45	47	46	44	44	44	43	42	40	40	39	39	39	39	40	41	43	45	47	46	43	41	39	43
February																																
Maximum	39	38	37	37	37	36	35	35	41	44	45	47	47	47	44	41	39	39	39	39	39	38	37	35	35	35	34	34	--	--	--	39
Minimum	38	37	37	37	36	34	34	35	35	41	44	45	47	44	41	39	39	39	39	39	38	36	35	35	35	34	33	33	--	--	--	38

LICKING RIVER BASIN--Continued

3-2495. LICKING RIVER AT FARMERS, KY.--Continued

Temperature (F°) of water, water year October 1964 to September 1965--Continued

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
March																																
Maximum	36	39	41	42	42	42	40	39	39	39	39	39	39	39	40	41	42	43	43	43	43	40	40	41	41	42	42	42	43	45	45	41
Minimum	34	36	39	41	42	40	39	38	39	39	38	39	39	39	39	40	41	42	43	43	40	39	39	40	41	41	42	41	42	43	45	40
April																																
Maximum	45	45	45	45	46	48	51	52	52	52	51	54	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	45	45	45	45	45	46	48	51	52	51	51	51	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May																																
Maximum	--	--	--	--	--	--	--	--	--	70	70	70	69	70	70	70	72	72	71	70	70	71	71	73	75	76	76	75	72	71	72	--
Minimum	--	--	--	--	--	--	--	--	--	70	70	69	67	67	68	70	70	71	70	70	68	69	71	71	73	74	75	72	69	68	69	--
June																																
Maximum	73	73	73	72	73	74	74	74	75	77	77	77	77	77	75	72	71	72	72	74	74	75	76	76	74	74	75	77	77	77	--	75
Minimum	70	72	72	71	71	73	73	73	74	75	76	76	74	74	72	70	70	70	70	71	73	75	75	76	72	72	73	75	77	75	--	73
July																																
Maximum	75	74	73	74	73	71	71	73	74	74	73	72	72	73	75	75	74	74	74	74	73	73	73	68	67	69	69	70	73	73	72	73
Minimum	73	73	73	73	71	70	71	71	73	73	71	71	70	72	73	72	72	72	73	72	71	72	67	66	66	66	68	69	70	71	70	71
August																																
Maximum	70	70	70	70	72	75	75	75	75	75	75	75	75	76	77	--	--	--	--	--	--	--	--	--	--	--	75	75	74	71	71	--
Minimum	70	70	68	68	70	72	75	75	74	74	74	73	74	75	76	--	--	--	--	--	--	--	--	--	--	--	74	74	69	70	70	--
September																																
Maximum	71	72	72	73	73	74	75	77	78	78	78	78	78	77	76	76	75	76	76	77	76	76	75	74	71	68	65	64	64	64	--	74
Minimum	71	70	71	71	73	74	74	75	77	77	78	78	77	76	76	75	74	75	76	76	76	75	74	71	68	65	64	61	62	63	--	72

Particle size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temper-ature (°F)	Sam-pling point	Discharge (cfs)	Sediment concen-tration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Mar. 26, 1965.......	2000			10100	589		44	58	74	86	92	97	99	100				SBWC
Mar. 26.............	2000			10100	589		22	36	56	79	91	93	98	100				SBN
July 23.............	0700			790	1090		51	60	75	90	96	99	100	--				SBWC

LICKING RIVER BASIN--Continued

3-2495. LICKING RIVER AT FARMERS, KY.--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	566	84	128	24	3	T	162	15	7
2..	401	92	100	24	6	T	125	9	3
3..	323	69	60	24	5	T	108	5	1
4..	251	60	41	24	3	T	1200	130	S 684
5..	266	40	29	24	7	T	2890	304	2370
6..	245	31	21	24	8	1	1900	170	872
7..	254	30	21	23	11	1	1040	82	230
8..	326	34	30	24	5	T	570	41	63
9..	206	31	17	24	4	T	395	22	23
10..	149	26	10	23	5	T	308	15	12
11..	113	17	5	21	10	1	260	16	11
12..	93	14	4	21	10	1	2620	183	S 1770
13..	82	14	3	23	5	T	3850	278	2890
14..	71	24	5	21	5	T	2530	141	963
15..	61	27	4	21	4	T	1620	126	551
16..	57	17	3	24	7	T	1020	52	143
17..	50	18	2	24	8	1	710	31	59
18..	47	16	2	24	5	T	626	16	27
19..	49	25	3	33	6	1	600	9	15
20..	45	18	2	266	41	S 78	570	7	11
21..	41	16	2	885	155	370	570	7	11
22..	36	7	1	377	102	104	530	6	9
23..	34	10	1	236	56	36	498	6	8
24..	32	6	1	149	36	14	486	11	14
25..	30	7	1	104	29	8	730	18	35
26..	27	9	1	154	24	10	2250	74	S 529
27..	24	4	T	458	25	31	3450	148	1380
28..	28	3	T	407	25	27	2960	149	1190
29..	26	2	T	314	24	20	2300	125	776
30..	24	4	T	224	18	11	1790	96	464
31..	24	7	T	--	--	--	1260	84	286
Total	3981	--	498	4024	--	719	39928	--	15407

Day	JANUARY			FEBRUARY			MARCH		
1..	880	31	74	594	11	18	1400	28	106
2..	1500	36	S 157	540	16	23	1310	20	71
3..	3070	86	713	500	11	15	2360	51	325
4..	2480	68	455	450	5	6	3140	145	1230
5..	1770	41	196	400	5	5	3350	170	1540
6..	1340	23	83	359	6	6	2940	83	659
7..	975	8	21	422	18	21	2360	55	350
8..	745	4	8	2340	104	657	2080	43	241
9..	876	14	S 40	2250	105	638	1950	29	153
10..	3970	140	S 1780	2560	100	A 700	1780	22	106
11..	6830	296	5460	3200	65	A 550	1560	16	67
12..	6470	175	3060	2320	41	257	1330	12	43
13..	4750	121	1550	2610	62	437	1160	7	22
14..	3330	83	746	2040	65	358	1000	5	14
15..	2070	49	274	1580	36	154	890	2	5
16..	1640	33	146	1240	19	64	790	2	4
17..	1390	25	94	1040	10	28	1540	56	S 469
18..	1100	18	53	885	10	24	3670	252	2500
19..	905	14	34	765	9	19	3240	151	1320
20..	715	9	17	660	6	11	2260	131	799
21..	646	6	10	582	6	9	1640	67	297
22..	602	6	10	558	4	6	1380	28	104
23..	602	5	8	514	4	6	1260	17	58
24..	670	6	11	490	6	8	1290	16	56
25..	885	9	22	1400	40	A 150	2680	94	S 838
26..	1020	10	28	1870	41	207	7420	467	9360
27..	1100	14	42	1650	30	134	11200	530	16000
28..	1020	14	39	1530	37	153	10800	307	8950
29..	890	10	24	--	--	--	9700	179	4700
30..	770	8	17	--	--	--	9020	93	2260
31..	695	10	19	--	--	--	6260	93	1570
Total	55706	--	15191	35349	--	4664	102760	--	54217

S Computed by subdividing day.
T Less than 0.50 ton.
A Computed from partly estimated-concentration graph.

LICKING RIVER BASIN--Continued

3-2495. LICKING RIVER AT FARMERS, KY.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL Mean discharge (cfs)	APRIL Suspended sediment Mean concentration (ppm)	APRIL Suspended sediment Tons per day	MAY Mean discharge (cfs)	MAY Suspended sediment Mean concentration (ppm)	MAY Suspended sediment Tons per day	JUNE Mean discharge (cfs)	JUNE Suspended sediment Mean concentration (ppm)	JUNE Suspended sediment Tons per day
1..	4480	116	1400	1580	32	137	118	12	4
2..	3050	78	642	1240	23	77	102	17	5
3..	1950	51	269	1080	17	50	90	16	4
4..	1570	37	157	915	15	37	104	12	3
5..	1340	25	90	740	12	24	130	12	4
6..	1180	20	64	622	11	18	111	9	3
7..	1540	63	S 300	574	10	15	106	9	3
8..	2880	134	1040	570	10	15	154	9	4
9..	3820	230	A 2400	478	9	12	182	10	5
10..	4450	224	2690	418	10	11	160	12	5
11..	3670	140	A 1400	371	8	8	132	8	3
12..	3220	100	A 850	344	7	6	137	14	5
13..	1840	60	298	314	7	6	139	25	9
14..	1620	53	232	290	5	4	93	13	3
15..	1420	35	134	266	6	4	84	15	3
16..	1710	28	129	269	7	5	77	13	3
17..	2090	52	293	212	7	4	63	8	1
18..	2060	38	211	200	8	4	59	9	1
19..	3800	180	A 1800	278	--	40	55	10	1
20..	3300	74	659	377	93	95	52	8	1
21..	2400	43	279	296	19	15	50	6	1
22..	1740	29	136	257	11	8	47	5	1
23..	1810	46	225	221	16	10	42	5	1
24..	2080	178	1000	191	18	9	42	7	1
25..	2120	144	824	176	17	8	38	5	1
26..	6110	270	A 4500	152	13	5	34	5	T
27..	7070	179	3420	137	12	4	33	7	1
28..	4990	110	1480	130	16	6	32	7	1
29..	3070	76	630	130	21	7	33	9	1
30..	2110	49	279	125	16	5	39	7	1
31..	--	--	--	125	8	3	--	--	--
Total	84490	--	27831	13078	--	652	2538	--	80

Day	JULY Mean discharge (cfs)	JULY Mean concentration (ppm)	JULY Tons per day	AUGUST Mean discharge (cfs)	AUGUST Mean concentration (ppm)	AUGUST Tons per day	SEPTEMBER Mean discharge (cfs)	SEPTEMBER Mean concentration (ppm)	SEPTEMBER Tons per day
1..	65	13	2	185	--	4	115	--	5
2..	132	23	8	157	--	3	200	--	8
3..	260	--	300	125	--	2	154	--	6
4..	392	--	270	113	7	2	108	14	B 4
5..	173	182	85	90	9	2	84	12	B 3
6..	134	129	47	77	8	2	69	11	B 2
7..	115	55	17	67	7	1	61	10	B 2
8..	90	47	11	65	10	2	55	10	B 1
9..	97	--	8	67	10	2	47	10	B 1
10..	208	--	30	61	11	2	44	11	B 1
11..	474	--	50	61	11	2	41	12	B 1
12..	359	--	17	55	11	2	45	14	B 2
13..	230	--	9	50	10	1	90	--	7
14..	149	--	6	44	10	1	176	--	5
15..	106	--	4	39	10	1	144	35	14
16..	90	--	2	32	10	1	118	16	5
17..	93	--	3	30	10	1	104	21	6
18..	102	--	3	28	10	1	97	20	5
19..	82	--	2	28	10	1	93	20	5
20..	71	--	2	86	30	B 7	108	20	6
21..	57	--	2	77	13	B 3	86	14	3
22..	47	--	1	122	25	A 8	71	14	3
23..	4020	1800	B 20000	442	--	130	75	18	4
24..	9000	--	14000	562	--	80	199	48	S 34
25..	3750	--	3040	269	25	B 18	1100	148	440
26..	630	--	270	185	20	B 10	590	98	156
27..	371	--	85	167	17	B 8	338	52	47
28..	263	--	30	125	15	B 5	239	45	29
29..	236	--	11	122	15	B 5	170	27	12
30..	305	--	7	125	15	B 5	137	20	7
31..	236	--	6	95	15	B 4	--	--	--
Total	22337	--	38328	3751	--	316	4958	--	844

Total discharge for year (cfs-days).. 372900
Total load for year (tons).. 158747

S Computed by subdividing day.
T Less than 0.50 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

LICKING RIVER BASIN--Continued

3-2515. LICKING RIVER AT McKINNEYSBURG, KY.

LOCATION.--At gaging station at county highway bridge at McKinneysburg, Pendleton County, 6.5 miles southeast of Falmouth, 9.0 miles upstream from Blanket Creek, and 12.8 miles upstream from South Fork.
DRAINAGE AREA.--2,326 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1965.
Water temperatures: October 1952 to September 1965.
Sediment records: October 1952 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 636 micromhos Nov. 14; minimum daily, 112 micromhos July 26.
Water temperatures: Maximum, 83°F July 26; minimum, freezing point on many days during November to March.
Sediment concentrations: Maximum daily, 2,160 ppm Apr. 11; minimum daily, 5 ppm May 14.
Sediment loads: Maximum daily, 98,600 tons Apr. 11; minimum daily, 1 ton on several days during October and November.
EXTREMES, 1952-65.--Specific conductance: Maximum daily, 674 micromhos Nov. 20, 1961; minimum daily, 83 micromhos Mar. 4, 1962.
Water temperatures: Maximum, 90°F July 3, 1964; minimum, freezing point on many days during winter months.
Sediment concentrations: Maximum daily, 4,230 ppm Feb. 25, 1956; minimum daily, 1 ppm on many days during 1952-56, 1963.
Sediment loads: Maximum daily, 223,000 tons Feb. 25, 1956; minimum daily, less than 0.50 ton on many days during 1952-56, 1961, 1963-64.
REMARKS.--Values reported for iron are in solution when analyzed. Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) maximum daily turbidity for each month, and (4) composite of all daily samples for each month. Flow affected by ice Dec. 20-24.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Non-carbonate	Specific conductance (micromhos at 25°C)	pH	Color	Turbidity
Oct. 2, 1964	233	6.6	0.01					84	25	12			129	98	29	235	7.8	5	--
Oct. 3	--	--	--					--	--	--			--	--	--	--	--	--	65
Oct. 5	419	7.0	.01					90	30	42			210	122	48	350	7.4	5	--
Oct. 1-31	167	--	--					--	--	--			155	--	--	275	--	--	--
Nov. [illegible]	32	4.6	.03					72	32	24			153	98	39	265	7.6	5	--
Nov. 14	30	5.4	.01					80	30	135			347	168	103	636	7.6	5	--
Nov. 23	--	--	--					--	--	--			--	--	--	--	--	--	210
Nov 1-30	191	--	--					--	--	--			249	--	--	457	--	--	--
Dec. 3	446	5.7	.02					68	35	42			176	109	54	323	7.4	5	--
Dec. 4	--	--	--					--	--	--			--	--	--	--	--	--	1400
Dec. 15	5920	5.6	.06					52	23	7.0			94	72	30	166	6.9	15	--
Dec 1-31	4419	--	--					--	--	--			126	--	--	215	--	--	--
Jan. 2, 1965	--	--	--					--	--	--			--	--	--	--	--	--	900
Jan. 13	8810	6.3	.28					49	21	5.0			90	61	21	142	7.3	22	--
Jan. 26	2270	8.9	.08					102	30	10			149	118	34	258	7.7	7	--
Jan. 1-31	4053	--	--					--	--	--			122	--	--	202	--	--	--

LICKING RIVER BASIN--Continued

3-2515. LICKING RIVER AT McKINNEYSBURG, KY.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$ Calcium, magnesium	Hardness as $CaCO_3$ Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color	Turbidity
Feb. 8, 1965........	--	--	--					--	--	--			--	--	--	--	--	--	450
Feb. 9.............	6120	7.7	0.02					100	24	6.5			152	117	35	243	7.9	10	--
Feb. 16............	3530	7.7	.04					67	21	6.5			126	82	27	182	7.6	5	--
Feb. 1, 8-28.......	4619	--	--					--	--	--			135	--	--	209	--	--	--
Mar. 18............	--	--	--					--	--	--			--	--	--	--	--	--	3000
Mar. 25............	4200	7.8	.03					90	27	6.0			144	102	28	223	7.8	7	--
Mar. 29............	19000	6.8	.01					48	24	2.0			100	58	18	131	6.9	60	--
Mar. 1-31..........	7739	--	--					--	--	--			118	--	--	192	--	--	--
Apr. 1.............	13100	9.0	.04					46	19	5.0			70	64	26	128	7.4	25	--
Apr. 9.............	5720	7.7	.04					106	26	5.0			138	127	40	241	7.9	20	--
Apr. 11............	--	--	--					--	--	--			--	--	--	--	--	--	4700
Apr. 1-30..........	7380	--	--					--	--	--			103	--	--	181	--	--	--
May 1..............	4660	9.3	.02					68	23	5.0			90	80	24	169	7.6	5	--
May 26.............	--	--	--					--	--	--			--	--	--	--	--	--	180
May 28.............	442	5.6	.03					116	30	10			182	125	30	270	7.3	10	--
May 1-31...........	1005	--	--					--	--	--			142	--	--	219	--	--	--
June 3.............	892	9.2	.06					132	29	6.0			199	138	30	289	7.9	27	--
June 7.............	--	--	--					--	--	--			--	--	--	--	--	--	1000
June 8.............	772	7.0	.12					86	19	4.0			139	93	22	199	7.3	44	--
June 1-30..........	313	--	--					--	--	--			144	--	--	252	--	--	--
July 1.............	65	9.6	.05					98	21	18			136	110	30	262	7.9	5	--
July 24............	--	--	--					--	--	--			--	--	--	--	--	--	12400
July 26............	16100	6.6	.13					40	14	4.0			86	49	16	112	7.5	70	--
July 1-31..........	2592	--	--					--	--	--			114	--	--	207	--	--	--
Aug. 11............	390	9.7	.01					128	21	10			146	126	21	271	8.2	5	--
Aug. 26............	--	--	--					--	--	--			--	--	--	--	--	--	1500
Aug. 28............	738	4.8	.17					66	14	4.5			70	70	16	150	7.1	40	--
Aug. 1-31..........	438	--	--					--	--	--			134	--	--	230	--	--	--
Sept. 1............	11500	5.8	.09					57	10	2.0			104	62	16	125	7.7	30	1300
Sept. 24...........	342	6.5	.01					A154	28	10			198	157	31	324	8.3	10	--
Sept. 1-30.........	2059	--	--					--	--	--			152	--	--	256	--	--	--

A Includes 1 ppm carbonate (CO_3).

LICKING RIVER BASIN--Continued

3-2515. LICKING RIVER AT McKINNEYSBURG, KY.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	265	265	292	177	205	214	128	169	241	262	212	125
2.....	235	275	314	195	--	207	142	177	241	260	213	210
3.....	236	--	323	215	--	202	153	183	289	222	213	198
4.....	347	320	241	204	--	--	171	185	225	208	214	196
5.....	350	353	242	180	--	209	189	190	249	207	216	222
6.....	309	397	263	--	--	210	188	196	244	193	224	--
7.....	265	438	186	184	--	201	200	199	200	225	231	234
8.....	249	484	--	192	224	195	218	203	199	238	236	237
9.....	254	529	190	212	243	215	241	208	233	191	228	242
10.....	288	569	205	214	217	215	185	210	254	194	256	242
11.....	347	603	192	228	211	212	183	208	252	211	271	240
12.....	304	324	173	168	215	206	165	210	257	197	242	188
13.....	299	632	216	142	200	201	171	211	261	193	228	196
14.....	294	636	175	152	193	202	164	208	270	226	234	257
15.....	--	634	166	157	185	209	182	216	244	213	234	257
16.....	283	612	175	177	182	207	217	218	239	197	234	238
17.....	263	586	188	--	182	209	213	228	244	185	232	238
18.....	254	565	205	183	196	207	197	234	252	211	232	305
19.....	254	529	208	187	196	189	204	245	261	224	231	308
20.....	259	492	207	208	200	159	204	250	254	236	234	300
21.....	259	458	210	203	216	167	159	229	255	249	235	310
22.....	263	407	208	215	210	186	161	237	252	248	242	313
23.....	265	357	216	222	211	194	175	237	249	246	--	321
24.....	267	331	225	235	--	192	187	258	247	171	245	324
25.....	267	328	202	246	--	223	197	241	252	144	267	293
26.....	263	374	213	258	240	215	192	171	257	112	243	263
27.....	261	433	235	232	210	189	201	234	--	145	161	248
28.....	254	449	202	233	211	133	157	270	266	176	150	234
29.....	256	371	188	--	--	131	137	257	266	191	168	273
30.....	256	331	186	207	--	135	148	257	266	199	202	261
31.....	259	--	179	--	--	135	--	255	--	207	238	--
Average	274	451	214	200	--	192	180	219	248	205	225	251

LICKING RIVER BASIN--Continued

3-2515. LICKING RIVER AT McKINNEYSBURG, KY.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	55	59	57	53	51	52	49	48	50	46	46	44	47	47	--	49	48	49	48	47	48	46	46	45	48	45	46	49	47	46	44	47
November	44	45	--	46	46	47	43	44	43	42	45	47	48	49	44	45	48	47	46	43	37	34	32	37	35	37	39	39	36	32	--	43
December	32	32	34	40	40	38	34	--	34	37	39	42	39	39	37	35	34	33	32	32	32	32	32	35	36	39	38	37	39	41	38	35
January	32	32	34	37	37	38	36	39	36	37	36	36	38	36	35	33	--	33	32	32	32	32	32	34	36	37	34	36	--	32	--	34
February	32	--	--	--	--	--	--	32	34	41	42	44	41	42	38	39	42	44	40	38	32	32	32	--	--	32	32	32	--	--	--	--
March	32	35	39	--	38	36	37	37	38	38	38	37	37	38	40	40	42	40	42	40	39	43	41	41	40	41	39	43	42	45	44	41
April	47	46	46	42	47	50	47	53	55	53	55	54	54	55	56	54	56	59	54	55	56	57	59	60	61	57	54	56	57	55	--	55
May	57	60	60	63	65	66	68	68	69	70	68	67	68	68	67	70	69	70	68	69	67	70	71	71	75	73	72	70	65	67	73	69
June	72	74	71	67	72	73	70	71	72	73	76	77	75	75	72	71	70	69	70	71	73	75	77	77	76	73	--	78	78	78	--	74
July	74	74	72	71	73	72	74	75	75	74	73	72	73	75	76	75	75	76	76	75	76	76	79	81	82	83	82	75	73	72	72	78
August	73	72	72	73	73	76	78	78	76	76	74	73	76	76	78	81	82	82	80	77	75	76	--	76	75	74	74	73	69	69	72	75
September	68	77	67	68	69	--	70	73	72	74	76	67	69	71	69	68	68	72	74	73	73	71	74	70	67	65	66	64	63	64	--	71

LICKING RIVER BASIN--Continued

3-2515. LICKING RIVER AT McKINNEYSBURG, KY.--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	278	24	18	32	12	1	635	36	62
2..	233	26	16	32	11	1	515	29	40
3..	605	51	83	32	14	1	446	34	41
4..	555	32	48	34	17	2	7120	1000	A 19000
5..	419	26	29	32	28	2	7610	960	19700
6..	342	21	19	31	37	3	6100	441	7260
7..	270	20	15	31	12	1	4200	228	2590
8..	254	19	13	30	10	1	2440	149	982
9..	245	15	10	31	8	1	1490	135	543
10..	245	26	17	32	9	1	1060	138	395
11..	236	32	20	30	15	1	3540	600	A 5700
12..	184	24	12	30	13	1	13400	650	A 24000
13..	159	23	10	30	18	1	11600	378	11800
14..	132	21	7	30	13	1	10200	400	11000
15..	115	22	7	32	11	1	5920	230	3680
16..	96	24	6	35	16	2	3350	131	1180
17..	90	24	6	37	16	2	2120	79	452
18..	81	24	5	38	18	2	1500	51	207
19..	78	23	5	46	18	2	1170	30	95
20..	71	10	2	58	13	2	1000	25	68
21..	64	11	2	63	17	3	930	22	55
22..	62	14	2	106	90	26	880	15	36
23..	54	15	2	313	145	123	830	11	25
24..	51	12	2	838	43	97	800	11	24
25..	45	10	1	500	26	35	6310	745	S 14800
26..	41	10	1	690	29	54	9380	622	15800
27..	38	12	1	595	29	47	9840	393	10400
28..	36	22	2	482	27	35	8460	252	5760
29..	36	16	2	680	36	66	6090	183	3010
30..	41	13	1	766	43	89	4560	131	1610
31..	36	12	1	--	--	--	3480	107	1010
Total	5192	--	365	5716	--	604	136976	--	161325

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	2760	102	760	1300	12	42	4440	68	815
2..	6350	399	S 9120	1100	11	33	4990	390	A 5300
3..	8930	467	11300	1000	11	30	9030	550	A 13000
4..	8400	254	5760	1100	10	30	9210	--	6500
5..	6130	131	2170	1500	10	40	11100	260	A 7800
6..	4120	73	812	2500	10	68	10400	182	5110
7..	2940	50	397	3870	--	10000	8310	150	3360
8..	2220	35	210	5330	350	5040	7030	100	1900
9..	3670	166	S 2180	6120	244	4030	6690	74	1340
10..	4860	137	1800	8080	324	7070	5740	60	930
11..	6670	133	2400	8770	270	6390	4680	47	594
12..	8480	190	4350	10400	345	9690	3750	41	415
13..	8810	250	5950	8590	190	4410	3050	32	264
14..	8520	160	3680	6430	127	2200	2490	25	168
15..	7270	110	2160	4810	100	1300	2140	21	121
16..	5120	57	788	3530	112	1070	1860	22	110
17..	3340	32	289	2670	44	317	4500	--	22000
18..	2540	29	199	2160	35	201	9300	1700	42600
19..	2140	18	104	1820	28	138	10200	925	25500
20..	1780	17	82	1570	23	97	7670	340	7040
21..	1560	19	80	1370	16	59	5160	170	2370
22..	1440	12	47	1240	14	47	3720	146	1470
23..	1510	11	45	1120	15	45	2860	115	888
24..	1680	11	50	1100	16	48	2490	67	450
25..	1920	15	78	6580	--	29000	4200	146	S 1950
26..	2270	22	135	6830	375	6920	11800	595	18900
27..	2430	26	171	6440	181	3150	15600	685	28900
28..	2320	28	175	5360	91	1320	16200	575	25200
29..	2130	24	138	--	--	--	19000	925	47500
30..	1820	19	93	--	--	--	16900	730	33300
31..	1500	14	57	--	--	--	15400	263	10900
Total	125630	--	55580	112690	--	92785	239910	--	316695

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.

LICKING RIVER BASIN--Continued

3-2515. LICKING RIVER AT McKINNEYSBURG, KY.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	13100	140	4950	4660	87	1090	188	46	23
2..	9700	108	2830	3120	64	539	175	35	17
3..	6170	123	2050	2490	43	289	892	--	2700
4..	4210	103	1170	2030	31	170	522	1000	A 1400
5..	3180	75	644	1690	25	114	281	275	209
6..	2670	59	425	1490	21	84	346	223	208
7..	2780	53	398	1270	16	55	2080	1230	S 7360
8..	3160	86	734	1120	11	33	772	900	1880
9..	5720	279	S 4560	1010	6	16	442	422	504
10..	7330	500	9900	948	6	15	437	191	225
11..	14400	2160	S 98600	843	6	14	410	120	133
12..	12300	710	23600	755	6	12	338	96	88
13..	9690	293	7670	670	11	20	350	83	78
14..	5720	149	2300	595	5	8	350	66	62
15..	3870	90	940	530	6	9	338	60	55
16..	3820	82	846	478	8	10	251	66	45
17..	4040	81	884	428	8	9	182	66	32
18..	4340	77	902	419	23	26	142	69	26
19..	7110	213	S 4300	755	82	167	122	66	22
20..	9310	339	8520	660	73	130	106	61	17
21..	9690	248	6490	605	41	67	92	64	16
22..	6580	107	1900	600	43	70	81	64	14
23..	4490	76	921	510	41	56	74	70	14
24..	5170	112	1560	424	37	42	71	71	14
25..	6530	600	A 11000	370	35	35	67	71	13
26..	11500	750	A 23000	766	--	2300	60	62	10
27..	13000	460	16100	733	340	S 710	55	58	9
28..	13000	285	10000	442	162	193	56	59	9
29..	11200	155	4690	298	81	65	54	59	9
30..	7630	96	1980	242	55	36	62	67	11
31..	--	--	--	206	43	24	--	--	--
Total	221410	--	253864	31157	--	6408	9396	--	15203

Day	JULY			AUGUST			SEPTEMBER		
1..	65	68	12	595	55	88	11500	1600	A 50000
2..	332	243	S 811	580	54	85	6420	882	15300
3..	4600	1870	23200	432	49	57	4850	127	1660
4..	2140	1010	5840	358	40	39	2250	238	S 1590
5..	1810	880	4300	309	33	28	958	129	334
6..	1100	570	1700	251	30	20	670	96	174
7..	733	225	445	212	29	17	486	79	104
8..	610	124	202	267	35	S 28	362	62	61
9..	525	94	133	312	16	13	270	49	36
10..	1200	--	2600	334	39	35	203	46	25
11..	2440	755	4970	390	49	52	494	370	A 490
12..	1930	630	3280	428	42	48	5890	600	A 9500
13..	1500	275	1110	270	37	27	4300	348	4040
14..	920	120	298	185	44	22	3170	241	2060
15..	1190	--	850	142	42	13	1840	242	1200
16..	630	--	170	118	39	12	1740	324	1520
17..	398	--	55	101	37	10	1520	295	1210
18..	302	--	30	88	33	8	936	75	190
19..	236	--	20	101	38	10	733	61	121
20..	190	--	15	212	36	21	555	54	81
21..	166	--	12	148	35	14	464	33	41
22..	146	--	10	105	47	13	402	28	30
23..	1060	--	1800	136	53	19	358	29	28
24..	12500	--	59000	750	169	S 563	342	28	26
25..	15900	1100	A 47000	2680	407	2940	2950	295	S 2550
26..	16100	310	B 13000	1190	344	1110	3140	280	2370
27..	7700	140	B 2900	700	220	416	2070	160	894
28..	1630	110	B 480	738	186	371	1270	76	261
29..	936	95	240	505	125	170	909	48	118
30..	716	80	B 150	346	82	77	716	42	81
31..	650	65	114	582	270	B 420	--	--	--
Total	80355	--	174747	13565	--	6746	61768	--	96095

Total discharge for year (cfs-days)..1043765
Total load for year (tons)..1180417

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

LICKING RIVER BASIN--Continued

3-2515. LICKING RIVER AT McKINNEYSBURG, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Dec. 12, 1964	1300			15100	616		50	59	69	78	95	99	100	--				SBWC
Dec. 26	1020			10000	804		47	60	73	86	93	98	99	100				SBWC
Dec. 26	1020			10000	804		40	57	69	85	91	95	98	100				SBN
Apr. 11, 1965	1600			18200	2730		44	54	66	80	94	99	100	--				SBWC
June 3	0825			892	502		65	76	87	95	98	100	--	--				SBWC
July 25	0800			15600	1200		56	66	79	88	98	99	100	--				SBWC
July 25	0800			15600	1200		36	52	75	91	95	96	100	--				SBN

LICKING RIVER BASIN--Continued

3-2525. SOUTH FORK LICKING RIVER AT CYNTHIANA, KY.

LOCATION.--At gaging station at bridge on State Highways 356 and 36, at Cynthiana, Harrison County, 0.4 mile downstream from Grays Run and in pool formed by old milldam, 2.6 miles downstream.
DRAINAGE AREA.--621 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to August 1951.
Water temperatures: October 1949 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 85°F Aug. 16, 17; minimum, freezing point Feb. 2-7.
EXTREMES, 1949-65.--Water temperatures: Maximum, 87°F June 30, 1952, July 14, 1954; minimum, freezing point on many days during winter months.
REMARKS.--Small diversion by Cynthiana municipal waterplant.

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0700 and 1800)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
0700......	61	64	62	62	64	63	62	60	61	60	57	59	58	56	56	57	56	57	56	52	52	51	50	49	49	48	49	50	54	52	50	56
1600......	64	65	63	64	64	64	63	62	62	60	59	57	57	58	57	58	59	57	56	52	54	52	51	50	51	50	51	54	54	53	53	57
November																																
0700......	51	52	52	53	52	50	50	52	49	50	51	53	53	50	52	55	55	54	53	48	44	39	38	39	41	44	45	48	49	44	--	49
1800......	53	54	54	55	54	53	53	52	52	53	54	54	54	53	55	56	56	55	51	48	43	40	40	42	45	46	48	50	49	43	--	50
December																																
0700......	40	40	42	43	43	40	39	40	40	40	43	42	42	40	38	40	40	37	34	34	34	35	40	45	48	48	45	46	45	48	45	41
1800......	41	42	43	44	42	40	40	41	42	43	43	42	42	39	40	40	39	36	34	35	35	40	45	48	48	47	47	46	48	48	44	42
January																																
0700......	44	44	41	40	40	41	44	46	47	41	38	37	39	38	38	37	34	34	34	35	35	37	39	41	41	43	40	40	37	36	34	39
1800......	44	44	42	41	42	44	46	48	45	40	38	39	40	38	38	36	34	34	35	37	37	39	42	42	43	42	40	39	38	36	34	40
February																																
0700......	34	34	32	32	32	32	32	36	39	43	47	48	45	44	41	42	43	45	46	42	45	41	40	41	40	37	38	41	--	--	--	40
1800......	34	32	32	32	32	32	36	39	43	47	49	47	44	44	43	44	47	48	45	45	44	41	42	42	37	39	41	45	--	--	--	41
March																																
0700......	44	46	45	45	42	41	40	41	41	40	39	40	41	42	41	40	44	44	41	40	40	41	44	44	43	43	41	43	45	46	47	42
1800......	46	46	45	43	43	41	41	41	41	40	40	41	43	42	41	44	45	44	41	41	41	44	45	44	43	41	43	45	46	49	49	43
April																																
0700......	48	50	50	52	51	52	54	58	59	57	59	59	57	57	58	58	58	60	59	59	60	61	62	64	64	64	60	56	56	57	--	57
1800......	51	51	52	52	52	54	59	60	58	59	60	59	58	58	59	59	60	60	60	61	61	63	65	65	64	64	59	57	58	60	--	59
May																																
0700......	60	62	64	65	67	67	68	69	71	73	73	72	70	70	72	74	74	74	73	73	72	73	74	74	76	76	76	77	74	75	75	71
1800......	62	65	67	68	68	68	69	72	73	74	73	73	71	73	74	74	75	74	74	73	74	74	76	76	77	78	78	76	76	76	77	73
June																																
0700......	75	77	77	75	77	78	76	77	76	78	78	79	79	76	75	74	74	75	76	77	78	78	78	79	77	76	78	79	81	80	--	77
1800......	77	78	77	77	78	77	77	78	78	79	79	78	78	77	76	75	76	77	78	78	78	79	79	79	78	78	80	82	81	80	--	78
July																																
0700......	79	79	79	80	78	75	78	77	80	80	80	79	78	80	79	80	80	79	80	78	77	79	81	82	83	82	81	81	80	79	78	79
1800......	80	79	81	80	78	78	78	80	80	80	81	80	81	81	81	81	80	81	80	79	79	82	82	84	84	83	82	82	81	80	79	81
August																																
0700......	78	77	75	74	77	80	82	82	81	79	78	76	76	77	82	83	84	83	83	81	79	80	78	75	76	76	78	78	74	76	73	78
1800......	78	78	76	78	81	83	81	82	81	79	78	77	78	82	84	85	85	83	83	82	80	81	78	76	77	78	79	77	75	74	74	79
September																																
0700......	71	70	70	73	74	73	73	74	76	77	79	77	76	75	75	73	74	77	78	79	80	79	78	75	70	68	65	64	66	70	--	74
1800......	72	71	73	75	75	74	75	77	78	80	78	77	76	76	76	74	78	79	80	80	80	79	78	73	71	68	66	67	71	69	--	75

GREAT MIAMI RIVER BASIN

3-2650. STILLWATER RIVER AT PLEASANT HILL, OHIO

LOCATION.--At gaging station at highway bridge, 0.8 mile northwest of Pleasant Hill, Miami County, and 2 miles downstream from Painter Creek.
DRAINAGE AREA.--503 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1965.
Sediment records: October 1963 to September 1965.
EXTREMES, 1964-65.--Sediment concentrations: Maximum daily, 1,300 ppm Apr. 9; minimum daily, 2 ppm on several days in December and August.
Sediment loads: Maximum daily, 14,000 tons Apr. 9; minimum daily, 0.1 ton on several days in December and August.
EXTREMES, 1963-65.--Sediment concentrations: Maximum daily, 1,300 ppm Apr. 9, 1965; minimum daily, 2 ppm on several days in December 1964 and August 1965.
Sediment loads: Maximum daily, 21,400 tons Apr. 21, 1964; minimum daily, 0.1 ton on many days in 1963-65.
REMARKS.--Flow affected by ice Dec. 19-23, Jan. 17, 18, Feb. 23, 24. Diurnal fluctuation is caused by Greenville powerplant.

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 1200 and 1800)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	--	65	--	--	--	--	--	--	--	--	--	--	--	--	--	56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
November	--	58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	42	--	--	--	--	--	--	45	--	--	--	--	--
December	--	--	--	--	--	--	--	--	--	--	41	--	--	--	--	--	--	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
January	--	--	--	--	--	--	--	49	--	--	--	--	--	--	32	--	--	--	--	--	--	--	--	--	--	--	--	--	32	--	--	--
February	--	--	--	--	32	--	--	--	32	45	44	40	--	--	--	--	--	--	39	--	--	--	--	--	--	--	--	--	--	--	--	--
March	42	--	42	41	38	--	--	--	--	--	--	--	--	--	--	--	--	--	34	--	--	--	--	38	--	--	--	--	--	--	--	--
April	--	--	--	--	--	55	56	53	52	52	57	53	54	53	51	--	--	--	--	--	--	--	62	54	51	52	51	--	--	--	--	--
May	--	--	--	--	--	--	74	--	--	--	--	--	--	74	--	--	--	--	--	--	75	--	--	79	72	69	--	66	--	--	--	--
June	--	74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	75	--	--	--	--	--	--	76	--	--	--	--	--	--	--
July	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	82	--	--	--	--	--	--	82	--	--	--	--	--	--	--	--	--
August	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	80	--	--	--	--	--	--	77	--	--	--	--	--
September	--	--	70	--	--	--	--	--	--	70	--	--	71	--	74	55	74	--	--	--	--	--	--	65	--	--	--	--	--	--	--	--

GREAT MIAMI RIVER BASIN--Continued

3-2650. STILLWATER RIVER AT PLEASANT HILL, OHIO--Continued

Suspended sediment, water year October 1964 to September 1964
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	17	14	0.6	26	10	0.7	26	2	0.1
2..	17	17	.8	26	10	.7	27	2	.1
3..	17	18	.8	24	9	.6	30	2	.2
4..	16	18	.8	24	8	.5	47	2	.2
5..	15	17	.7	25	6	.4	51	2	.3
6..	15	17	.7	23	4	.2	40	2	.2
7..	16	16	.7	24	3	.2	33	2	.2
8..	14	16	.6	21	3	.2	31	2	.2
9..	16	16	.7	23	3	.2	29	2	.2
10..	16	15	.6	22	3	.2	26	2	.1
11..	18	15	.7	22	3	.2	40	2	.2
12..	17	15	.7	23	3	.2	60	3	.5
13..	18	15	.7	21	3	.2	75	3	.6
14..	18	15	.7	21	4	.2	55	3	.4
15..	19	15	.8	22	6	.4	40	3	.3
16..	19	13	.7	28	13	B 1	34	3	.3
17..	22	13	.8	38	20	B 2	33	3	.3
18..	22	12	.7	31	13	B 1	24	2	.1
19..	30	12	1.0	32	6	.5	24	3	.2
20..	27	12	.9	34	5	.4	24	3	.2
21..	25	12	.8	31	4	.3	24	3	.2
22..	21	11	.6	25	4	.3	26	4	.3
23..	23	10	.6	23	4	.2	28	4	.3
24..	23	10	.6	23	4	.2	33	4	.4
25..	24	10	.6	27	14	B 1	39	5	.5
26..	23	10	.6	29	16	B 1	54	5	.7
27..	24	10	.6	33	4	.4	51	5	.7
28..	29	10	.8	32	3	.2	41	5	.6
29..	25	10	.7	30	3	.2	34	6	.6
30..	24	10	.6	28	3	.2	34	5	.4
31..	25	10	.7	--	--	--	31	5	.4
Total	635	--	21.9	791	--	14.0	1144	--	10.0

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	43	7	0.8	41	9	1.0	618	48	80
2..	93	8	2.0	37	8	.8	904	75	183
3..	140	10	3.8	34	8	.7	1320	102	364
4..	106	10	2.9	30	8	.6	1480	84	S 371
5..	74	8	1.6	30	7	.6	3210	228	1980
6..	59	7	1.1	37	7	.7	2010	--	800
7..	50	7	.9	93	--	6	1760	--	460
8..	48	6	.8	282	--	45	1920	--	600
9..	54	5	.7	388	120	A 120	1260	--	220
10..	56	5	.8	2400	729	S 5000	892	--	110
11..	53	4	.6	3200	488	S 4440	666	--	55
12..	49	4	.5	1590	153	657	544	19	28
13..	44	4	.5	890	92	221	482	18	23
14..	36	4	.4	501	63	85	442	17	20
15..	35	3	.3	371	46	46	398	15	16
16..	24	3	.2	297	35	28	346	14	13
17..	22	3	.2	259	25	17	366	13	13
18..	22	3	.2	238	19	12	346	11	10
19..	24	4	.2	215	15	8.7	274	10	7.4
20..	31	4	.3	180	15	7.3	225	9	5.5
21..	35	4	.4	163	15	6.6	203	9	4.9
22..	37	4	.4	131	15	5.3	190	9	4.6
23..	62	--	1	120	14	4.5	289	20	S 20
24..	183	--	137	130	14	4.9	1160	82	257
25..	328	--	13	218	14	8.2	715	60	116
26..	246	--	209	206	15	8.3	498	22	30
27..	185	--	185	180	15	7.3	369	19	19
28..	196	--	255	254	25	B 17	319	19	16
29..	83	10	2.2	--	--	--	369	--	25
30..	72	10	1.9	--	--	--	426	--	35
31..	50	10	1.4	--	--	--	329	18	B 16
Total	2540	--	65.1	12515	--	10759.5	24330	--	5902.4

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

GREAT MIAMI RIVER BASIN--Continued

3-2650. STILLWATER RIVER AT PLEASANT HILL, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	301	17	B 14	568	33	51	105	28	7.9
2..	302	17	14	457	31	38	111	25	7.5
3..	264	20	14	377	28	28	121	25	8.2
4..	243	24	16	320	27	23	110	25	7.4
5..	232	35	22	284	25	19	95	25	6.4
6..	1050	350	A 1000	256	22	15	97	25	6.5
7..	2520	900	A 6100	230	20	12	126	30	B 1
8..	1470	450	A 1800	209	18	10	207	39	22
9..	4060	1300	A 14000	192	16	8.3	148	34	14
10..	2130	275	S 1750	186	15	7.5	111	27	8.1
11..	1900	378	S 2100	183	14	6.9	94	21	5.3
12..	3660	730	7210	166	12	5.4	83	16	3.6
13..	2130	335	S 2160	154	10	4.2	72	15	2.9
14..	1100	108	321	142	9	3.4	66	15	2.7
15..	909	57	140	133	10	3.6	62	15	2.5
16..	964	46	120	127	10	3.4	57	14	2.2
17..	715	40	77	123	10	3.3	55	14	2.1
18..	560	38	57	117	10	3.2	52	13	1.8
19..	451	36	44	111	11	3.3	50	13	1.8
20..	386	35	36	104	11	3.1	48	13	1.7
21..	339	33	30	98	11	2.9	46	13	1.6
22..	318	32	27	97	12	3.1	49	13	1.7
23..	298	37	30	153	--	30	46	13	1.6
24..	861	159	S 617	210	--	50	43	13	1.5
25..	4750	494	6340	234	170	A 110	41	12	1.3
26..	6240	300	5050	316	200	A 170	39	10	1.0
27..	2660	114	S 866	241	64	42	38	10	1.0
28..	1470	48	190	176	40	19	37	10	1.0
29..	1000	40	108	131	36	13	38	12	1.2
30..	727	35	69	112	34	10	72	25	B 5
31..	--	--	--	105	31	8.8	--	--	--
Total	44010	--	50322	6312	--	710.4	2319	--	141.5
	JULY			AUGUST			SEPTEMBER		
1..	94	35	B 9	21	8	0.4	16	8	0.3
2..	77	18	A 4	22	9	.5	16	7	.3
3..	55	10	1.5	23	13	.8	16	7	.3
4..	46	10	1.2	22	9	.5	17	--	1
5..	43	10	1.2	22	9	.5	37	--	6
6..	46	10	1.2	23	8	.5	19	--	2
7..	40	8	.9	26	8	.6	13	--	1
8..	40	7	.8	23	9	.6	23	--	2
9..	47	5	.6	25	10	.7	39	--	3
10..	62	14	B 2	24	9	.6	27	27	2.0
11..	60	15	2.4	22	8	.5	26	26	1.8
12..	47	15	1.9	22	8	.5	59	28	4.5
13..	39	16	1.7	21	8	.4	68	13	2.4
14..	35	16	1.5	19	8	.4	66	12	2.1
15..	34	16	1.5	19	8	.4	121	50	A 16
16..	33	16	1.4	19	8	.4	193	55	A 30
17..	38	25	B 2	18	7	.3	106	33	9.4
18..	38	19	B 2	16	5	.2	59	31	4.9
19..	47	15	1.9	16	3	.1	38	31	3.2
20..	49	14	1.8	17	2	.1	36	31	3.0
21..	36	13	1.3	13	2	.1	41	31	3.4
22..	30	13	1.0	16	3	.1	36	31	3.0
23..	28	13	1.0	17	5	.2	38	31	3.2
24..	26	13	.9	17	6	.3	32	31	2.7
25..	28	12	.9	16	7	.3	30	31	2.5
26..	26	12	.8	14	7	.3	29	30	2.3
27..	22	10	.6	15	8	.3	26	30	2.1
28..	29	8	.6	18	10	.5	26	29	2.0
29..	23	5	.3	16	8	.3	27	28	2.0
30..	23	5	.3	16	8	.3	27	26	1.9
31..	20	5	.3	14	8	.3	--	--	--
Total	1261	--	48.5	592	--	12.0	1307	--	120.3

Total discharge for year (cfs-days)..........97756
Total load for year (tons)..........68127.6

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

GREAT MIAMI RIVER BASIN--Continued

3-2650. STILLWATER RIVER AT PLEASANT HILL, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters 0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	Method of analysis
Feb. 10, 1965.....	1300			2880	976		63	75	84	93	96	98	100					SBWC
Feb. 11...........	0800			3690	638		79	88	94	97	99	99	100					SBWC
Apr. 9............	1630			4340	1020		76	88	93	97	98	99	100					SBWC
Apr. 9............	1630			4340	1020		35	54	85	96	98	98	99	100				SBN
Apr. 12...........	1450			4170	1300		70	84	93	97	96	99	100					SBWC
Apr. 12...........	1450			4170	1300		36	61	92	98	99	100	--					SBN
Apr. 25...........	1450			5580	534		67	75	82	89	94	97	100					SBWC

GREAT MIAMI RIVER BASIN--Continued

3-2713.5. GREAT MIAMI RIVER AT WEST CARROLLTON, OHIO

LOCATION.--At bridge on Farmersville-West Carrollton Road, at West Carrollton, Montgomery County.
DRAINAGE AREA.--2,647 square miles.
RECORDS AVAILABLE.--Chemical analyses: April to September 1965.
REMARKS.--Samples collected monthly during April to June, and weekly from July to September. Samples for iron and manganese filtered clear when collected. No discharge records available.

Chemical analyses, in parts per million, April to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
																			Calcium, magnesium	Noncarbonate				
Apr. 14, 1965		6.3		0.78	0.07	58	21	7.3	2.5		164	0	61	14	0.2	19	0.87	295	231	96		458	7.7	40
May 19........		4.2		.29	.14	75	32	20	2.7		270	0	78	28	.4	9.0	2.6	416	319	98		661	7.9	10
June 16........		4.1		.16	.03	75	36	30	3.1		302	0	89	38	.7	2.9	3.3	435	335	88		737	7.7	10
July 7........		--		.13	.18	--	--	--	--		270	0	82	35	--	5.0	3.8	408	314	92		689	7.8	--
July 14.......		--		.12	.16	--	--	--	--		294	0	89	44	--	3.4	4.7	456	322	80		757	8.0	--
July 21.......		--		.13	.14	--	--	--	--		304	0	88	45	--	3.2	2.6	455	333	84		758	7.9	--
July 28.......		--		.12	.17	--	--	--	--		294	0	91	47	--	1.9	1.4	444	320	78		759	7.7	--
Aug. 4........		--		.11	.30	--	--	--	--		304	0	92	54	--	3.0	4.5	483	326	76		803	7.3	--
Aug. 11.......		--		.16	.03	--	--	--	--		278	0	86	48	--	5.0	4.8	457	310	82		749	7.7	--
Aug. 18.......		--		.11	.13	--	--	--	--		312	0	91	50	--	2.2	6.1	474	326	70		789	8.2	--
Aug. 24.......		--		.07	.14	--	--	--	--		300	0	84	48	--	1.0	4.4	449	322	76		757	7.9	--
Aug. 31.......		--		.38	.08	--	--	--	--		304	0	92	52	--	2.0	5.9	469	322	72		798	7.8	--
Sept. 8.......		--		.18	.18	--	--	--	--		286	0	78	46	--	2.5	10	431	306	71		725	7.8	--
Sept. 15......		--		.22	.54	--	--	--	--		142	0	42	24	--	2.1	1.1	227	160	44		339	7.3	--
Sept. 22......		--		.09	.17	--	--	--	--		280	0	83	42	--	5.0	9.2	431	308	78		714	7.9	--
Sept. 28......		--		.28	.42	--	--	--	--		302	0	87	42	--	5.8	4.7	466	332	84		745	8.1	--

GREAT MIAMI RIVER BASIN--Continued

3-2713.5. GREAT MIAMI RIVER AT WEST CARROLLTON, OHIO--Continued

Chemical analyses, in parts per million, April to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor[a]
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Apr. 14, 1965	9.4	87	0.000	0.1	0.4	0.15		600	M-16
May 19	6.6	80	.000	.3	.7	.30		20	M-32
June 16	2.2	25	.000	.4	2.0	.70		35	M-4
July 7	4.2	52	.000	.4	2.3	.40		--	--
July 14	6.0	79	.001	.5	2.1	.70		15	M-8
July 21	3.5	45	.004	.5	2.3	1.0		25	M-8
July 28	1.4	18	.001	.5	2.8	.30		40	M-8
Aug. 4	.8	10	.011	.5	2.5	.40		20	M-16
Aug. 11	6.0	78	.008	.5	3.0	1.0		40	M-8
Aug. 18	4.6	62	.015	.6	3.0	.80		15	M-8
Aug. 24	2.1	26	--	.4	3.8	.60		15	M-16
Aug. 31	2.2	26	.010	.3	4.3	1.0		20	M-16
Sept. 8	2.0	26	.018	.4	3.1	.80		15	M-16
Sept. 15	5.4	63	.007	.2	.9	.30		100	M-8
Sept. 22	2.6	32	.002	.3	2.1	1.0		7	M-8
Sept. 28	3.4	39	.000	.6	2.3	1.0		6	M-16

a The dilution ratio at which odor is just detectable; M-musty.

GREAT MIAMI RIVER BASIN--Continued

3-2715. GREAT MIAMI RIVER AT MIAMISBURG, OHIO

LOCATION.--Temperature recorder at gaging station on left bank, 600 feet downstream from bridge on State Highway 725 at Miamisburg, Montgomery County, and 0.3 mile downstream from Bear Creek.
DRAINAGE AREA (revised).--2,711 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1959 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 96°F July 24, 25; minimum, 38°F Feb. 26-28.
EXTREMES, 1959-65.--Water temperatures: Maximum, 96°F July 24, 25, 1965; minimum, freezing point Jan. 10, 11, 15-17, 1962.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	74	75	75	75	72	68	68	68	67	66	66	66	69	72	72	72	72	72	69	68	65	65	65	64	66	67	67	70	70	69	69	69
Minimum	69	73	72	71	68	66	65	65	65	63	62	62	65	67	69	70	68	69	68	64	63	62	63	62	62	64	65	67	69	66	65	66
November																																
Maximum	68	68	69	70	70	68	66	65	63	63	65	65	65	65	64	67	66	63	62	60	54	48	47	50	53	53	54	54	53	50	--	61
Minimum	64	66	65	67	68	65	63	62	61	61	63	64	63	61	61	64	63	62	60	54	48	46	44	46	50	53	52	53	50	46	--	58
December																																
Maximum	47	47	49	48	47	46	45	47	48	49	52	52	51	51	47	45	45	45	43	44	45	46	50	54	55	54	50	48	52	54	54	49
Minimum	46	46	47	47	46	44	44	46	47	48	49	51	51	47	45	43	45	42	41	42	44	45	47	50	54	50	48	47	47	52	52	47
January																																
Maximum	54	48	47	46	48	49	50	54	54	50	47	49	48	46	46	44	40	41	43	45	46	49	49	48	44	42	42	41	41	40	40	46
Minimum	48	46	46	45	46	46	48	50	50	46	45	46	46	44	44	40	39	39	41	43	45	46	48	44	41	42	41	41	39	40	39	44
February																																
Maximum	39	39	41	43	44	46	45	43	43	44	44	45	44	42	41	43	44	45	45	45	43	41	40	41	41	39	38	41	--	--	--	42
Minimum	39	39	39	40	41	44	41	41	40	40	42	44	42	41	41	41	43	44	45	43	41	39	39	40	39	38	38	38	--	--	--	41
March																																
Maximum	44	44	44	44	43	40	40	41	41	41	41	42	43	43	44	46	48	48	47	44	42	44	46	46	44	41	42	45	49	49	49	44
Minimum	41	44	44	43	40	39	39	40	41	40	39	41	42	43	42	44	46	47	44	42	40	40	44	44	41	41	41	42	45	48	49	42
April																																
Maximum	49	50	49	48	51	56	57	57	57	54	55	56	56	54	54	53	55	55	57	60	62	65	65	65	62	56	56	56	59	62	--	56
Minimum	49	49	48	48	48	51	56	56	54	52	52	55	54	52	53	53	52	55	55	57	60	62	65	61	56	56	55	54	55	58	--	54
May																																
Maximum	65	68	72	73	75	76	77	77	76	76	75	74	75	77	78	76	76	78	78	77	78	82	82	79	81	81	78	78	75	74	76	76
Minimum	62	65	68	72	73	75	76	76	75	75	74	73	73	75	75	74	74	75	76	76	74	76	79	78	79	78	77	74	73	72	72	74
June																																
Maximum	78	78	78	79	82	82	81	83	84	84	84	87	85	83	80	80	81	82	83	82	82	85	85	86	85	85	85	85	87	88	--	83
Minimum	74	76	76	74	76	79	79	79	80	81	81	82	80	78	77	76	77	76	76	78	79	81	83	82	81	79	81	82	82	86	--	79
July																																
Maximum	87	86	85	85	87	84	84	87	87	85	85	85	87	89	91	91	90	89	89	87	88	89	91	96	96	93	92	90	88	85	84	88
Minimum	82	81	82	80	83	79	82	83	84	82	80	81	80	85	88	86	85	86	84	83	82	85	88	90	90	87	87	87	84	81	81	84
August																																
Maximum	82	82	82	82	86	88	88	86	84	83	85	87	86	89	91	91	91	91	90	88	87	86	85	84	85	85	85	84	80	79	77	85
Minimum	81	79	77	79	80	84	86	84	81	80	80	81	82	83	86	88	88	88	88	85	82	83	83	81	83	82	81	80	76	77	75	82
September																																
Maximum	79	79	80	81	82	83	83	86	87	87	87	80	74	80	80	74	78	84	84	85	86	86	85	85	78	77	75	76	78	78	--	81
Minimum	74	75	75	79	81	79	78	82	85	84	80	73	72	73	74	73	73	77	81	83	83	83	83	78	75	74	73	72	75	77	--	77

GREAT MIAMI RIVER BASIN--Continued

3-2716. GREAT MIAMI RIVER NEAR MIAMISBURG, OHIO

LOCATION.--At Chautauqua Road Bridge, about 2 miles south of Miamisburg, Montgomery County, off old U.S. Highway 25, and 2.6 miles downstream from gaging station at Miamisburg.
DRAINAGE AREA (revised).--2,715 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1961 to September 1965.
Water temperatures: March 1964 to September 1965.
EXTREMES, March 1964 to September 1965.--Specific conductance: Maximum daily, 980 micromhos Feb. 7, 1965; minimum daily, 270 micromhos Apr. 22, 1964.
pH: Maximum daily, 9.0 June 8, 1964; minimum daily, 6.8 July 6, 7, 1965.
Dissolved oxygen: Maximum daily, 15.0 ppm May 18, June 8, 1964; minimum daily, 0.0 ppm on several days during June to November 1964, August and September 1965.
Water temperatures: Maximum, 99°F Aug. 16-18, 1965; minimum, 40°F Jan. 31, 1965.
REMARKS.--Samples for iron and manganese were filtered clear when collected. Chemical samples were collected weekly during October and November and monthly December through March. Monthly sampling discontinued after March 1965. A continuous recorder was installed 400 feet downstream in the basement of O. H. Hutchings power station in March 1964, and takes water from channel under building. Discharge records given for Great Miami River at Miamisburg.

Chemical analyses, in parts per million, October 1964 to March 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 7, 1964..	259	--		0.29	0.06	--	--	--	--		328	0	102	56	--	1.2	4.2	506	342	72		842	7.7	--
Oct. 14.......	271	--		.25	.41	--	--	--	--		326	0	94	55	--	3.8	3.0	498	344	76		837	7.7	--
Oct. 21.......	295	--		.27	.22	--	--	--	--		308	0	99	54	--	3.7	6.5	496	332	79		830	7.7	--
Oct. 28.......	364	--		.18	.16	--	--	--	--		337	0	95	52	--	3.3	5.6	500	349	72		841	7.8	--
Nov. 4........	295	--		.19	.33	--	--	--	--		332	0	94	52	--	2.9	4.9	503	349	76		844	7.2	--
Nov. 11.......	277	--		.26	.21	--	--	--	--		342	0	95	52	--	3.5	5.4	495	348	68		853	7.7	--
Nov. 18.......	319			.21	.14	--	--	--	--		284	0	84	48	--	4.7	7.0	424	304	71		729	7.6	--
Dec. 16.......	683	6.4		.24	.39	74	34	37	3.7		290	0	89	42	0.5	9.5	4.0	445	325	87		727	7.9	5
Jan. 13, 1965.	692	7.7		.30	.29	87	34	32	3.3		306	0	106	41	.6	8.2	3.1	501	357	106		786	8.0	7
Feb. 17.......	2450	7.3		.16	.15	82	31	18	2.6		244	0	106	30	.2	20	1.6	415	332	132		661	7.9	15
Mar. 17.......	2680	6.0		.14	.16	81	31	16	2.2		246	0	92	30	.2	21	1.4	408	330	128		657	7.9	7

GREAT MIAMI RIVER BASIN--Continued

3-2716. GREAT MIAMI RIVER NEAR MIAMISBURG, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965

Day	OCTOBER								NOVEMBER							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	850	820	7.7	7.6	0.4	0.0	80	70	870	850	7.7	7.6	0.9	0.3	67	64
2..	860	830	7.7	7.6	.4	.0	82	74	860	840	7.7	7.6	.9	.1	79	65
3..	870	840	7.7	7.6	.4	.0	76	--	860	830	7.7	7.6	1.1	.4	78	67
4..	--	--	--	--	--	--	--	--	850	820	7.6	7.5	.9	.3	80	70
5..	870	840	7.7	7.6	1.5	.3	76	72	870	850	7.6	7.5	.8	.3	80	73
6..	850	830	7.7	7.6	1.5	.0	76	68	880	850	7.7	7.6	.6	.3	88	71
7..	860	840	7.7	7.6	.9	.3	77	68	900	860	7.7	7.6	.7	.0	88	71
8..	880	830	7.7	7.6	1.0	.1	74	66	890	870	--	7.6	.6	.3	72	64
9..	850	820	7.7	7.6	.7	.1	73	66	870	860	7.7	7.6	1.7	.4	76	67
10..	850	820	7.7	7.6	.9	.3	69	63	850	820	7.7	7.6	2.0	1.2	75	64
11..	--	--	--	--	--	--	--	--	840	830	7.7	7.6	1.2	.4	75	64
12..	--	--	--	--	--	--	--	--	870	850	7.6	7.5	.8	.3	75	65
13..	840	--	--	7.6	1.7	--	75	--	860	830	7.6	7.4	.8	.3	76	66
14..	840	810	7.7	7.6	1.1	.3	77	67	880	850	7.5	7.4	.9	.3	69	64
15..	850	820	7.7	7.4	.5	.0	78	70	870	850	7.5	7.4	.7	.3	65	62
16..	850	820	7.7	7.6	.8	.1	79	70	840	740	7.6	7.5	1.6	.9	72	69
17..	860	830	7.7	7.6	.9	.1	76	69	830	770	7.6	7.4	1.5	.7	72	67
18..	860	--	7.7	7.6	--	.1	--	70	790	740	7.6	7.5	1.2	.5	72	64
19..	820	800	7.7	7.6	1.3	.3	74	--	800	740	7.6	7.4	.8	.3	70	62
20..	820	790	7.7	7.6	1.8	.9	74	66	840	810	7.7	7.5	3.2	.6	63	58
21..	810	780	7.7	7.6	1.7	.7	74	64	820	750	7.7	7.6	4.4	3.0	58	51
22..	840	810	7.7	7.6	.5	.4	73	64	800	750	7.8	7.6	5.4	4.4	51	47
23..	880	840	7.7	7.6	1.2	.3	72	63	830	800	7.8	7.7	6.9	4.7	51	47
24..	860	830	7.7	7.6	1.2	.3	67	62	800	770	7.9	7.7	8.3	6.0	54	48
25..	860	840	7.7	7.6	1.0	.5	63	61	840	780	7.9	7.6	6.0	3.3	59	51
26..	850	830	7.7	7.6	1.3	.0	76	62	850	820	7.7	7.6	3.7	2.8	57	55
27..	860	830	7.7	7.6	1.3	.3	77	65	850	790	7.7	7.6	3.0	2.4	62	55
28..	850	840	7.8	7.7	1.5	.3	77	67	800	760	7.8	7.5	4.5	2.7	60	57
29..	860	840	7.7	7.6	.8	.1	79	69	820	780	7.8	7.7	6.1	4.5	58	54
30..	850	830	7.7	7.6	.9	.1	78	67	780	720	7.8	7.6	7.8	6.0	54	49
31..	870	840	7.7	7.6	1.1	.1	71	66	--	--	--	--	--	--	--	--

Day	DECEMBER								JANUARY							
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	790	760	8.2	7.8	8.2	7.7	50	47	790	680	7.9	7.6	8.4	4.6	54	49
2..	860	790	8.0	7.8	7.8	6.7	51	48	--	680	8.0	--	9.1	--	--	46
3..	800	760	7.9	7.7	7.7	7.2	54	50	--	--	--	--	--	--	--	--
4..	780	710	7.8	7.7	8.5	7.3	52	49	700	670	7.8	7.6	10.3	9.6	47	44
5..	720	640	7.8	7.7	8.5	7.6	52	48	760	700	8.0	7.8	10.0	8.7	49	46
6..	770	690	7.8	7.6	8.5	7.5	49	46	800	750	8.0	7.8	9.3	8.5	50	46
7..	770	730	7.9	7.7	8.8	7.6	47	46	810	790	8.0	7.8	9.0	7.6	52	48
8..	740	720	7.9	7.8	9.3	7.9	47	46	840	800	7.8	7.7	7.8	6.6	56	52
9..	800	740	7.9	7.7	8.0	6.0	50	47	830	780	7.9	7.7	6.9	6.3	57	52
10..	800	770	7.8	7.7	6.9	5.7	53	49	780	730	7.9	7.8	9.3	6.9	52	46
11..	810	720	7.7	7.6	7.2	5.8	57	51	780	750	8.0	7.9	10.5	9.0	46	43
12..	720	620	7.6	7.5	8.0	6.7	57	54	820	770	8.2	7.9	10.5	9.0	49	45
13..	700	630	7.6	7.5	6.7	6.0	56	53	820	780	8.1	7.8	10.0	8.7	49	47
14..	720	690	7.7	7.6	7.4	6.0	53	51	790	770	8.0	7.8	10.4	9.0	48	45
15..	750	700	7.9	7.7	--	--	48	46	810	790	7.9	7.7	10.8	8.2	47	44
16..	770	730	7.9	7.7	9.3	6.6	48	46	840	790	7.9	7.7	10.3	8.8	47	41
17..	780	760	7.9	7.8	8.8	8.1	49	48	--	--	--	--	--	--	--	--
18..	780	760	7.9	7.7	8.8	7.9	48	44	890	860	7.8	7.7	11.1	9.4	48	45
19..	810	780	8.0	7.8	9.6	8.5	45	42	890	860	7.9	7.8	10.3	8.7	49	42
20..	830	730	7.9	7.8	9.1	8.2	45	43	910	860	8.0	7.9	9.9	8.0	52	43
21..	810	780	7.9	7.8	8.4	7.1	47	45	930	910	8.0	7.8	9.1	6.9	52	46
22..	870	800	7.8	7.7	8.1	7.0	48	46	960	870	7.9	7.7	8.4	6.1	51	48
23..	860	830	7.7	7.6	7.3	5.7	50	47	940	890	7.8	7.7	7.2	5.4	53	51
24..	850	830	7.7	7.6	5.8	3.6	55	49	960	740	7.8	7.7	9.9	5.5	51	46
25..	840	790	7.8	7.6	5.6	3.7	53	52	690	670	7.9	7.7	12.0	11.1	44	42
26..	790	680	7.7	7.6	7.2	5.2	54	49	700	650	8.0	7.8	11.7	10.9	47	44
27..	710	690	7.8	7.7	7.9	7.2	49	46	690	670	8.1	7.9	12.4	11.0	45	42
28..	730	710	7.8	7.7	9.0	7.8	46	45	810	670	8.1	7.9	12.6	12.0	49	41
29..	770	710	7.8	7.7	8.9	7.4	53	45	760	680	8.1	7.9	12.8	12.0	48	42
30..	750	730	7.7	7.6	7.4	6.0	56	52	780	720	8.0	7.8	12.6	11.6	53	42
31..	790	760	7.7	7.6	6.0	5.1	56	52	790	740	8.1	7.9	12.7	11.7	51	40

GREAT MIAMI RIVER BASIN--Continued

3-2716. GREAT MIAMI RIVER NEAR MIAMISBURG, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965--Continued

Day	FEBRUARY								MARCH							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	810	760	8.0	7.8	12.4	11.4	50	43	690	640	8.0	7.8	12.1	11.4	51	45
2..	820	780	8.1	7.8	12.1	10.5	49	42	640	550	8.0	7.8	12.3	11.2	50	46
3..	870	820	8.0	7.8	11.4	9.9	45	41	550	510	7.9	7.8	11.8	11.1	48	46
4..	870	830	8.0	7.8	10.8	9.2	50	42	510	500	8.0	7.8	12.2	11.2	49	46
5..	870	840	7.9	7.7	9.9	8.8	48	42	500	440	8.0	7.8	12.6	11.5	46	43
6..	910	840	7.9	7.8	9.3	8.1	50	45	530	440	8.1	7.9	13.0	12.1	46	42
7..	980	750	7.9	7.8	11.5	8.2	51	43	--	--	8.2	8.0	13.0	12.0	45	43
8..	750	690	7.9	7.8	11.8	9.4	45	42	530	510	8.2	8.0	12.7	12.0	48	43
9..	750	630	7.9	7.8	12.4	10.8	47	42	520	490	8.0	7.9	12.7	11.7	46	45
10..	--	--	7.9	7.7	11.3	9.7	49	44	550	500	8.1	8.0	13.0	11.8	45	42
11..	570	410	8.0	7.8	12.2	10.7	49	43	600	540	8.4	7.3	13.5	12.1	51	42
12..	470	370	7.9	7.7	11.9	10.2	48	46	620	600	8.3	7.4	12.7	11.8	51	46
13..	550	470	8.1	7.8	13.0	11.5	46	43	620	610	7.6	7.4	12.3	11.5	51	46
14..	590	550	8.2	8.0	13.3	12.5	44	42	640	620	7.6	7.4	12.1	11.3	48	45
15..	650	590	8.2	7.8	13.5	12.4	43	41	660	620	7.5	7.4	12.4	11.2	49	45
16..	670	640	8.1	7.9	13.0	12.0	45	43	660	640	7.5	7.4	11.8	10.5	50	46
17..	700	660	8.0	7.8	12.0	11.2	48	45	660	610	7.5	7.4	12.6	10.0	51	49
18..	710	680	7.9	7.7	11.2	10.6	49	47	680	660	7.6	7.5	12.0	9.9	51	48
19..	720	710	7.8	7.7	11.2	10.0	48	46	690	670	7.7	7.6	12.8	10.8	48	45
20..	730	710	7.9	7.7	11.4	10.5	47	45	720	690	7.7	7.5	13.5	11.8	45	43
21..	720	700	7.9	7.7	11.6	10.8	46	43	--	--	--	--	--	--	--	--
22..	720	710	7.9	7.7	12.4	11.4	46	41	740	650	7.7	7.6	14.1	12.3	51	45
23..	750	710	7.9	7.6	12.3	11.4	49	42	750	680	7.7	7.5	12.8	10.6	52	48
24..	780	700	7.9	7.7	11.9	11.0	50	42	680	610	7.6	7.5	13.2	11.1	48	45
25..	700	530	7.9	7.7	12.7	11.2	48	44	740	600	7.7	7.5	14.2	12.9	45	42
26..	640	550	8.0	7.8	13.5	12.4	50	42	610	580	7.7	7.5	14.2	13.2	45	43
27..	760	630	8.0	7.8	13.5	12.7	50	43	630	610	7.7	7.6	14.7	13.3	44	42
28..	790	690	8.0	7.9	12.7	12.0	54	44	640	620	7.7	7.6	14.1	12.9	48	44
29..	--	--	--	--	--	--	--	--	670	630	7.6	7.5	12.7	10.2	51	48
30..	--	--	--	--	--	--	--	--	680	670	7.6	7.5	13.3	10.9	52	49
31..	--	--	--	--	--	--	--	--	680	660	7.7	7.6	13.8	11.5	51	49

Day	APRIL								MAY							
1..	690	670	7.8	7.5	12.4	10.6	52	50	620	610	7.8	7.7	9.1	8.4	64	61
2..	670	650	7.6	7.4	11.9	10.1	52	50	650	620	7.8	7.7	9.1	7.9	67	64
3..	680	670	7.6	7.4	12.9	10.6	50	48	660	640	7.8	7.7	9.3	7.6	70	66
4..	680	660	7.7	7.5	12.4	11.4	51	48	670	650	7.8	7.7	8.1	6.6	72	68
5..	690	670	7.6	7.4	11.5	10.0	54	51	680	670	7.8	7.6	9.0	6.0	74	70
6..	690	500	7.5	7.2	10.6	9.6	60	54	680	660	7.9	7.6	9.3	5.6	75	72
7..	600	530	7.4	7.2	10.6	9.4	61	57	700	670	8.0	7.6	9.8	5.0	76	73
8..	--	--	7.2	7.1	10.5	9.7	60	57	700	680	8.2	7.6	11.2	4.8	76	73
9..	520	410	7.2	7.1	10.6	9.4	59	54	710	680	8.2	7.8	11.4	5.2	76	73
10..	410	390	7.2	7.0	11.4	10.6	--	--	720	680	8.2	7.9	10.3	5.2	76	73
11..	490	410	7.3	7.1	11.8	8.1	56	54	720	690	8.2	7.6	11.7	4.2	76	72
12..	430	400	7.1	6.9	11.2	9.9	--	--	730	690	8.1	7.6	8.7	3.9	75	72
13..	430	400	7.1	7.0	11.4	10.5	57	55	730	680	8.1	7.6	10.6	4.0	75	71
14..	490	420	7.6	7.1	11.8	10.5	56	53	740	690	8.1	7.6	11.2	3.8	76	71
15..	520	490	7.7	7.6	10.6	10.0	56	54	740	700	8.1	7.6	10.3	3.8	76	72
16..	560	520	7.8	7.7	11.1	10.5	54	52	730	710	8.0	7.6	9.3	3.9	75	71
17..	--	--	7.8	7.7	11.2	10.3	54	52	720	700	7.9	7.6	9.8	4.5	76	70
18..	--	--	--	--	--	--	--	--	720	620	7.7	7.5	8.2	4.4	76	72
19..	630	600	7.9	7.7	10.8	9.4	58	54	670	640	7.5	7.2	5.7	3.3	78	73
20..	680	630	7.8	7.7	9.8	9.0	61	58	710	670	7.6	7.2	5.4	2.6	76	73
21..	690	670	7.8	7.7	9.0	8.2	63	60	730	710	7.6	7.3	7.1	2.8	77	71
22..	680	660	7.7	7.7	10.0	7.5	66	63	750	730	7.5	7.3	6.3	2.3	78	73
23..	690	660	7.7	7.6	7.8	6.9	66	64	--	--	--	--	--	--	--	--
24..	680	630	7.7	7.6	8.2	6.7	64	60	700	590	7.6	7.2	6.3	4.5	79	76
25..	660	370	7.8	7.5	10.3	7.8	60	55	630	590	7.3	7.2	5.0	3.6	80	76
26..	380	350	7.5	7.4	10.6	9.9	56	54	620	590	7.3	7.2	5.6	3.7	78	76
27..	420	370	7.7	7.5	11.4	10.4	54	52	590	530	7.3	7.2	5.0	4.5	77	75
28..	510	420	7.8	7.6	11.2	10.6	56	52	630	580	7.4	7.3	5.7	4.4	75	70
29..	560	510	7.8	7.7	10.8	9.7	58	53	640	620	7.5	7.3	5.9	4.6	72	68
30..	--	--	7.9	7.6	11.5	9.1	62	57	660	630	7.5	7.3	6.4	4.8	72	68
31..	--	--	--	--	--	--	--	--	680	660	7.6	7.4	8.2	5.0	74	68

GREAT MIAMI RIVER BASIN--Continued

3-2716. GREAT MIAMI RIVER NEAR MIAMISBURG, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965--Continued

Day	JUNE								JULY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	700	680	7.7	7.4	8.4	5.7	76	70	770	730	7.2	7.1	2.2	0.3	86	82
2..	680	570	7.4	7.1	3.5	1.6	76	73	770	720	7.2	7.1	.6	.3	84	79
3..	720	680	7.6	7.3	6.6	2.8	76	73	770	730	7.3	7.1	1.7	.3	82	78
4..	710	680	7.8	7.4	8.6	3.3	77	70	750	700	7.3	7.1	2.8	.8	82	78
5..	710	680	7.8	7.4	8.4	3.1	80	73	710	670	7.2	7.0	2.8	.3	85	80
6..	700	680	7.9	7.5	8.4	2.8	80	75	670	550	7.2	6.8	5.2	1.0	84	78
7..	680	660	7.9	7.5	10.0	3.1	80	75	670	580	7.0	6.8	3.0	.3	84	81
8..	690	670	7.9	7.3	10.5	2.0	81	75	730	670	7.1	7.0	3.1	.6	86	81
9..	710	690	7.8	7.3	7.5	1.9	82	76	740	700	7.8	7.0	5.5	.3	88	84
10..	710	680	7.7	7.3	7.0	1.9	82	77	750	540	7.8	7.5	4.9	.3	88	81
11..	730	670	7.5	7.2	4.8	1.4	82	78	710	540	7.6	7.5	.8	.3	84	78
12..	750	700	7.5	7.2	4.8	1.2	84	79	720	690	7.7	7.6	1.5	.3	86	81
13..	730	690	7.5	7.2	7.4	.6	84	76	710	670	7.8	7.5	3.0	.6	86	81
14..	710	640	7.7	7.4	10.4	1.8	80	76	760	710	7.8	7.6	5.9	.6	89	84
15..	740	650	7.5	7.3	8.2	1.8	78	75	770	730	8.1	7.5	8.4	.8	92	86
16..	750	720	7.5	7.2	4.9	1.9	78	73	780	730	8.0	7.6	8.1	1.8	91	85
17..	750	730	7.5	7.3	4.5	.8	79	75	790	760	7.8	7.6	3.4	.6	88	84
18..	760	720	7.4	7.2	3.3	.6	78	75	790	780	7.6	7.6	3.3	.6	84	83
19..	780	740	7.3	7.1	4.1	.6	80	76	780	740	7.6	7.5	4.5	1.2	90	84
20..	770	750	7.3	7.2	1.8	.7	80	77	780	740	7.5	7.4	3.0	.9	90	84
21..	760	720	7.3	7.2	2.8	1.0	81	77	790	770	7.7	7.5	2.1	.7	89	82
22..	750	730	7.4	7.2	1.4	.4	82	78	800	770	7.7	7.5	3.9	.6	92	82
23..	770	750	7.2	7.1	.7	.3	82	81	800	770	7.6	7.6	3.4	.8	93	87
24..	760	700	7.2	7.1	1.2	.3	82	80	790	750	7.6	7.5	5.8	.3	97	88
25..	770	740	7.2	7.1	3.8	.5	82	79	780	750	7.6	7.5	4.2	.2	91	87
26..	790	760	7.2	7.1	4.0	.9	81	78	760	710	7.5	7.4	7.2	3.0	94	87
27..	770	760	7.2	7.1	2.8	.8	82	79	760	720	7.5	7.4	3.9	.3	94	88
28..	770	740	7.2	7.0	6.6	2.2	88	81	790	760	7.7	7.4	1.4	.1	94	87
29..	760	740	7.2	7.1	5.2	1.0	88	82	810	760	7.7	7.6	2.4	.1	92	84
30..	760	730	7.3	7.1	2.0	.3	86	83	820	780	7.7	7.5	2.4	.8	90	81
31..	--	--	--	--	--	--	--	--	830	800	--	--	2.6	.7	85	80

Day	AUGUST								SEPTEMBER							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	830	810	--	--	1.4	0.0	81	78	820	740	7.6	7.5	1.6	0.0	81	74
2..	850	780	7.7	7.4	4.8	.0	88	78	740	700	7.5	7.4	1.4	.0	85	76
3..	810	760	7.8	7.4	5.2	1.5	86	77	730	620	7.5	7.3	1.5	.0	87	76
4..	810	760	7.6	7.3	3.8	.2	87	79	720	630	7.5	7.3	1.5	.0	90	82
5..	840	780	7.7	7.3	5.1	.2	92	81	750	720	7.5	7.5	.2	.0	86	80
6..	810	800	7.6	7.4	3.3	.6	93	84	--	--	--	--	--	--	--	--
7..	820	750	7.6	7.4	4.6	1.8	92	88	--	--	--	--	--	--	--	--
8..	790	770	7.5	7.5	3.9	2.1	89	84	620	610	7.7	7.5	3.3	1.4	88	81
9..	780	760	7.5	7.3	1.4	.2	86	81	--	--	7.7	7.4	3.3	.6	94	86
10..	800	740	7.4	7.2	1.3	.0	88	79	--	--	7.7	7.5	3.9	1.0	--	--
11..	830	780	7.4	7.2	.9	.0	88	80	--	--	7.6	7.5	2.1	.0	86	76
12..	800	760	--	--	1.5	.0	90	81	--	--	--	--	--	--	--	--
13..	820	770	--	--	4.2	.1	93	84	--	--	--	--	--	--	--	--
14..	820	770	--	--	4.5	.3	93	82	--	--	--	--	--	--	--	--
15..	810	770	--	--	8.6	.8	91	84	--	--	--	--	--	--	--	--
16..	800	730	--	--	9.0	1.3	99	88	580	480	7.4	7.1	4.1	3.9	75	73
17..	790	740	--	--	7.6	2.6	99	90	610	520	7.7	7.1	3.9	1.2	78	70
18..	800	760	--	--	4.7	1.2	99	90	650	580	7.4	7.0	1.4	.3	82	75
19..	830	800	--	--	1.6	.0	98	90	660	650	7.5	7.4	1.8	.0	82	79
20..	830	800	--	--	2.0	.0	96	87	680	660	7.4	7.3	2.1	.0	87	81
21..	840	820	--	--	3.7	.0	90	84	700	650	7.6	7.4	1.5	.0	87	81
22..	850	830	--	--	6.1	.2	86	81	710	670	7.5	7.4	1.0	.0	87	82
23..	860	800	--	--	4.0	.0	91	82	730	700	7.5	7.3	.4	.0	84	81
24..	810	750	7.5	7.3	4.4	2.1	96	83	750	710	7.5	7.1	.3	.0	82	78
25..	780	770	7.4	7.3	3.4	1.2	94	84	750	720	7.4	7.3	.3	.0	78	74
26..	810	770	7.4	7.2	2.0	.4	96	86	780	740	7.4	7.3	.0	.0	75	72
27..	820	800	7.4	7.2	1.6	.1	90	85	780	720	7.4	7.3	1.4	.0	80	72
28..	830	800	7.3	7.2	2.9	.3	90	83	770	740	7.4	7.2	1.6	.2	80	74
29..	860	830	7.3	7.2	2.7	.0	84	76	790	770	--	--	1.0	.3	84	74
30..	840	780	7.3	7.2	2.1	1.0	89	79	800	770	7.6	7.5	.9	.0	84	76
31..	830	780	7.5	7.1	1.2	.6	87	78	--	--	--	--	--	--	--	--

GREAT MIAMI RIVER BASIN--Continued

3-2716. GREAT MIAMI RIVER NEAR MIAMISBURG, OHIO--Continued

Chemical analyses, in parts per million, October 1964 to March 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor[a]
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 7, 1964	0.2	2	0.032	1.1	3.0	1.0		90	M-16
Oct. 14	.8	9	.015	1.2	3.8	1.5		40	C-8
Oct. 21	1.4	14	.005	1.2	3.2	1.0		35	M-4
Oct. 28	.4	4	.028	1.2	4.6	1.5		40	M-16
Nov. 4	.2	2	.006	1.2	3.4	2.0		30	C-4
Nov. 11	.6	6	.012	1.2	4.1	1.5		40	C-4
Nov. 18	.4	4	.006	.9	2.7	1.0		60	M-16
Dec. 16	6.8	56	.039	.7	3.8	.50		80	M-8
Jan. 13, 1965	8.2	68	.027	.6	1.2	.30		85	M-16
Feb. 17	10.4	87	.006	.4	.7	.15		80	M-8
Mar. 17	10.2	88	.012	.2	.7	.20		65	M-16

a The dilution ratio at which odor is just detectable; M-musty, C-chemical.

GREAT MIAMI RIVER BASIN--Continued

3-2721. GREAT MIAMI RIVER AT MIDDLETOWN, OHIO

LOCATION.--On left bank at County Park dock at Middletown, Butler County, about 0.6 mile downstream from New York Central Railroad bridge, and 0.3 mile downstream from Twin Creek.
DRAINAGE AREA.--3,134 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1963 to September 1965.
REMARKS.--Samples were collected weekly October to November and July to September, and monthly December through June. Samples for iron and manganese were filtered clear when collected. No discharge records available.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
																			Calcium, magnesium	Noncarbonate				
Oct. 7, 1964..		--		0.20	0.23	--	--	--	--		328	0	93	56	--	1.0	4.2	503	332	62		831	7.7	--
Oct. 14.......		--		.38	.12	--	--	--	--		332	0	94	60	--	2.4	2.7	512	344	72		865	7.7	--
Oct. 21.......		--		.16	.08	--	--	--	--		314	0	90	54	--	1.1	5.8	489	322	64		822	7.6	--
Oct. 28.......		--		.18	.16	--	--	--	--		341	0	91	56	--	.0	5.5	507	341	61		852	7.7	--
Nov. 4........		--		.13	.11	--	--	--	--		344	0	89	54	--	.9	4.0	513	350	68		856	7.6	--
Nov. 11.......		--		.19	.07	--	--	--	--		340	0	92	55	--	.0	5.2	505	348	69		853	7.6	--
Nov. 18.......				.18	.07	--	--	--	--		322	0	94	54	--	4.3	5.2	433	344	80		821	7.6	--
Dec. 16.......		6.7		.25	.27	74	31	38	3.7		288	0	84	43	0.4	2.0	3.7	436	312	76		714	7.7	7
Jan. 13, 1965.		6.7		.21	.19	87	34	33	3.3		308	0	105	43	.5	9.0	2.7	494	357	105		791	7.9	15
Feb. 17.......		7.2		.20	.23	80	29	17	2.6		242	0	98	30	.2	19	1.1	407	319	120		648	7.9	17
Mar. 17.......		6.1		.23	.26	82	28	18	2.4		252	0	90	32	.2	14	1.3	412	320	113		665	7.9	10
Apr. 14.......		6.1		.86	.00	56	19	8.6	2.4		161	0	60	10	.2	15	.70	289	218	86		438	7.7	40
May 19........		2.8		.36	.16	74	31	21	2.7		270	0	81	28	.3	6.1	1.8	401	312	91		659	7.8	12
June 16.......		3.4		.12	.12	76	38	28	3.1		306	0	89	38	.4	2.5	2.7	452	346	94		748	7.5	15
July 7........		--		.24	.29	--	--	--	--		226	0	60	30	--	3.6	2.0	335	256	70		569	7.7	--
July 14.......		--		.14	.10	--	--	--	--		272	0	77	38	--	2.5	2.5	405	303	80		685	8.0	--
July 21.......		--		.12	.16	--	--	--	--		302	0	88	42	--	2.9	2.8	452	332	84		744	7.9	--
July 28......		--		.10	.15	--	--	--	--		286	0	92	47	--	.7	1.0	450	322	87		752	7.4	--
Aug. 4........		--		.10	.13	--	--	--	--		318	0	91	56	--	1.7	3.8	497	333	72		807	7.2	--
Aug. 11.......		--		.18	.04	--	--	--	--		290	0	94	49	--	1.0	3.1	466	326	88		760	7.5	--
Aug. 18.......		--		.10	.21	--	--	--	--		312	0	90	54	--	.4	4.4	481	332	76		796	8.2	--
Aug. 24.......		--		.10	.15	--	--	--	--		318	0	95	59	--	.8	4.9	501	332	71		835	7.9	--
Aug. 31.......		--		.19	.09	--	--	--	--		310	0	96	58	--	1.4	4.3	502	334	80		821	7.9	--
Sept. 8.......		--		.08	.15	--	--	--	--		292	0	82	46	--	3.0	3.7	434	312	72		734	7.9	--
Sept. 15......		--		.49	.24	--	--	--	--		256	0	78	44	--	2.3	3.0	408	278	68		683	7.7	--
Sept. 22......		--		.10	.18	--	--	--	--		274	0	81	38	--	5.2	5.0	424	309	84		695	7.9	--
Sept. 28......		--		.08	.18	--	--	--	--		306	0	89	50	--	5.0	3.6	484	330	78		779	7.8	--

GREAT MIAMI RIVER BASIN--Continued

3-2721. GREAT MIAMI RIVER AT MIDDLETOWN, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor[a]
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 7, 1964	1.4	15	0.002	1.0	1.6	0.80		35	M-16
Oct. 14	.6	7	.001	1.0	2.4	2.0		25	M-4
Oct. 21	.4	4	.016	1.1	2.4	2.0		15	M-8
Oct. 28	.0	0	.011	1.1	2.6	2.0		45	M-16
Nov. 4	.2	2	.005	1.1	2.4	2.5		15	M-4
Nov. 11	.0	0	.010	1.1	2.6	3.0		15	M-8
Nov. 18	.6	6	.000	1.0	2.7	1.5		20	M-16
Dec. 16	5.8	48	.068	.7	1.3	.80		55	C-16
Jan. 13, 1965	6.2	56	.032	.6	.8	.50		15	M-16
Feb. 17	10.0	83	.025	.3	.7	.20		17	M-8
Mar. 17	9.4	81	.013	.2	.6	.20		10	M-32
Apr. 14	7.8	72	.006	.1	.3	.20		800	M-64
May 19	2.6	31	.012	.3	.7	.40		12	M-16
June 16	1.4	17	.000	.3	.8	.60		25	M-8
July 7	2.2	28	.001	.2	1.0	.50		--	--
July 14	8.2	111	.000	.3	.7	.80		20	M-8
July 21	1.8	23	.008	.3	1.2	.70		35	M-8
July 28	1.2	16	.000	.4	1.3	1.0		45	M-8
Aug. 4	.6	7	.011	.3	1.7	.60		35	M-8
Aug. 11	2.0	26	.003	.3	1.2	.80		35	M-6
Aug. 18	7.0	96	.005	.4	1.2	1.0		25	M-16
Aug. 24	1.6	20	--	.3	3.0	.50		35	M-16
Aug. 31	1.4	17	.002	.3	1.8	1.0		10	M-8
Sept. 8	1.6	21	.006	.3	2.6	1.0		15	M-8
Sept. 15	2.1	25	.002	.3	2.0	.90		35	M-8
Sept. 22	.6	8	.016	.2	1.3	1.0		10	M-8
Sept. 23	.3	7	.006	.3	1.7	1.0		1	M-8

a The dilution ratio at which odor is just detectable; M-musty, C-chemical.

GREAT MIAMI RIVER BASIN--Continued

3-2724. GREAT MIAMI RIVER NEAR MIDDLETOWN, OHIO

LOCATION (revised).--At bridge on Liberty-Fairfield Road southwest of Middletown, Butler County, 0.7 mile upstream from Baltimore and Ohio Railroad bridge.
DRAINAGE AREA.--3,280 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1963 to September 1965.
REMARKS.--Samples were collected weekly October to November, July to September, and monthly December through June. Samples for iron and manganese were filtered clear when collected. No discharge records available. During the period October 1964 to April 1965 samples were collected 0.7 mile downstream.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
																			Calcium, magnesium	Noncarbonate				
Oct. 7, 1964..		--		0.42	0.22	--	--	--	--		202	0	221	61	--	1.7	0.08	601	364	198		912	7.2	--
Oct. 14.......		--		.34	.11	--	--	--	--		246	0	186	60	--	.6	.08	602	366	164		919	7.3	--
Oct. 21.......		--		5.1	.19	--	--	--	--		168	0	249	60	--	1.9	.12	620	368	230		934	6.7	--
Oct. 28.......		--		.29	.08	--	--	--	--		224	0	204	58	--	2.3	.08	591	368	184		917	7.2	--
Nov. 4........		--		.25	.08	--	--	--	--		240	0	196	58	--	2.5	.85	598	369	172		921	7.1	--
Nov. 11.......		--		.39	.00	--	--	--	--		232	0	202	57	--	2.3	.09	598	368	178		922	7.1	--
Nov. 18.......		--		.84	.08	--	--	--	--		240	0	181	60	--	3.1	.19	567	370	173		889	7.1	--
Dec. 16.......		6.4		2.3	.07	76	31	37	3.7		226	0	132	43	0.4	7.0	.18	466	317	132		727	7.3	3
Jan. 13, 1965.		6.0		2.1	.07	84	34	27	3.1		246	0	143	38	.5	8.8	.14	499	350	148		770	7.4	7
Feb. 17.......		6.8		.61	.07	79	30	15	2.4		224	0	104	28	.2	20	.10	415	321	137		631	7.6	20
Mar. 17.......		5.7		1.2	.14	79	30	14	2.1		226	0	103	28	.2	18	.09	418	321	136		660	7.6	10
Apr. 14.......		6.0		1.2	.10	55	18	8.2	2.6		155	0	58	14	.2	18	.54	274	211	84		430	7.6	40
May 19........		2.3		.98	.10	81	34	21	2.4		264	0	109	28	.4	7.1	.36	453	342	126		712	7.6	10
June 16.......		3.2		.91	.10	79	36	25	3.0		246	0	132	34	.4	3.9	.27	471	345	144		746	7.2	12
July 7........		--		.74	.20	--	--	--	--		214	0	143	39	--	5.3	.36	491	329	153		740	7.3	--
July 14.......		--		.90	.18	--	--	--	--		230	0	130	37	--	5.1	.18	453	324	135		729	7.5	--
July 21.......		--		.73	.19	--	--	--	--		248	0	143	51	--	4.0	.21	528	347	144		808	7.6	--
July 28.......		--		.43	.22	--	--	--	--		210	0	169	51	--	1.9	.08	531	337	165		815	7.0	--
Aug. 4........		--		.64	.26	--	--	--	--		282	0	127	54	--	3.8	.32	512	336	105		827	7.1	--
Aug. 11.......		--		1.3	.20	--	--	--	--		184	0	202	58	--	2.0	.12	567	349	198		869	6.9	--
Aug. 18.......		--		.49	.31	--	--	--	--		233	0	171	54	--	1.1	.21	543	350	159		855	7.7	--
Aug. 24.......		--		.30	.29	--	--	--	--		222	0	184	59	--	1.0	.14	566	349	167		873	7.4	--
Aug. 31.......		--		.22	.41	--	--	--	--		190	0	218	58	--	.0	.18	590	356	200		891	7.2	--
Sept. 8.......		--		.20	.32	--	--	--	--		212	0	171	58	--	2.5	.06	536	332	158		819	7.5	--
Sept. 15......		--		1.6	.30	--	--	--	--		136	0	123	35	--	3.9	.09	370	240	129		582	7.1	--
Sept. 22......		--		.51	.28	--	--	--	--		220	0	131	40	--	6.4	.47	460	309	129		719	7.5	--
Sept. 28......		--		.61	.14	--	--	--	--		212	0	171	47	--	6.0	.14	520	334	160		796	7.2	--

GREAT MIAMI RIVER BASIN--Continued

3-2724. GREAT MIAMI RIVER NEAR MIDDLETOWN, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor[a]
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 7, 1964	6.0	64	0.008	0.9	2.9	0.40		40	M-64
Oct. 14	2.8	29	.011	1.0	3.5	.90		8	M-32
Oct. 21	2.2	22	.003	1.0	3.5	.60		100	M-8
Oct. 28	1.8	18	.004	.9	4.2	.80		10	M-32
Nov. 4	3.8	40	.006	1.0	3.4	1.0		10	M-16
Nov. 11	3.6	38	.009	1.0	3.5	1.0		20	M-8
Nov. 18	1.6	16	.006	1.0	2.7	.90		35	M-32
Dec. 16	6.0	49	.006	.6	1.9	.80		95	M-16
Jan. 13, 1965	7.2	61	.004	.5	1.1	.40		100	M-16
Feb. 17	10.0	82	.015	.2	.5	.20		50	M-16
Mar. 17	9.0	78	.012	.2	1.0	.10		50	M-32
Apr. 14	9.0	83	.000	.1	.4	.15		1100	M-32
May 19	4.6	55	.007	.2	.1	.40		65	M-16
June 16	5.4	65	.000	.3	1.1	.30		85	M-4
July 7	4.6	57	.020	.3	1.3	.40		--	--
July 14	8.6	113	.000	.3	.4	.20		30	M-8
July 21	6.3	80	.000	.3	1.2	.40		70	M-4
July 28	3.4	44	.002	.3	1.4	.30		100	M-32
Aug. 4	4.2	51	.003	.4	1.8	.40		40	M-16
Aug. 11	3.9	48	.006	.4	2.4	.40		40	M-16
Aug. 18	3.2	42	.010	.3	2.0	.30		25	M-16
Aug. 24	2.8	34	--	.4	3.4	.20		15	M-8
Aug. 31	2.0	23	.011	.4	3.2	.40		6	M-8
Sept. 8	3.7	46	.003	.4	3.0	.40		25	M-8
Sept. 15	.0	0	.010	.2	1.6	.30		90	M-16
Sept. 22	2.3	32	.015	.2	1.3	.50		20	M-16
Sept. 28	2.6	28	.015	.3	2.3	.60		2	M-8

a The dilution ratio at which odor is just detectable; M-musty.

GREAT MIAMI RIVER BASIN--Continued

3-2740. GREAT MIAMI RIVER AT HAMILTON, OHIO

LOCATION.--Temperature recorder at gaging station on right bank, 1,000 feet downstream from Columbia Bridge at Hamilton, Butler County, and 3 miles downstream from Four Mile Creek.
DRAINAGE AREA(revised).--3,630 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951.
Water temperatures: October 1950 to September 1951, October 1957 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 94°F Aug. 16; minimum, 34°F Feb. 2,3.
EXTREMES, 1950-51, 1957-65.--Water temperatures: Maximum 94°F Aug. 16, 1965; minimum, freezing point on several days during December 1950, January and February 1951.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	68	69	69	69	68	66	65	64	62	61	60	60	61	62	63	63	64	64	64	63	61	60	60	59	58	59	59	61	61	64	64	63
Minimum	66	68	68	68	66	63	62	62	61	60	58	58	59	60	62	62	62	63	62	60	60	59	59	58	57	58	59	59	61	61	60	61
November																																
Maximum	67	65	67	66	66	65	63	61	62	61	62	62	63	62	61	63	63	62	61	59	54	48	47	47	48	48	51	52	52	51	—	59
Minimum	60	62	62	63	63	61	60	59	59	59	60	62	61	60	59	59	61	60	59	54	48	46	45	45	47	48	48	50	51	49	—	56
December																																
Maximum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	48	51	51	—
Minimum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	47	48	51	—
January																																
Maximum	51	47	46	44	43	44	45	50	50	47	46	44	43	43	42	41	37	37	37	37	40	42	43	39	39	39	39	38	37	36	36	42
Minimum	43	43	44	43	43	43	43	45	47	46	44	43	43	42	41	37	35	35	36	36	37	40	39	38	39	39	38	37	36	36	35	40.
February																																
Maximum	35	35	35	35	37	40	40	38	38	44	44	43	43	43	42	42	42	43	45	45	45	45	43	43	42	41	40	41	—	—	—	41
Minimum	35	34	34	35	35	37	37	37	38	38	42	42	43	42	41	41	42	42	43	45	45	43	43	42	40	39	39	40	—	—	—	40
March																																
Maximum	43	44	44	44	44	42	41	41	42	42	42	42	44	44	44	46	47	47	47	46	45	44	45	45	45	44	43	44	46	47	48	44
Minimum	41	43	44	44	42	41	41	41	41	42	42	42	42	44	43	44	46	47	46	45	44	44	44	45	44	43	42	43	44	46	47	43
April																																
Maximum	49	49	49	50	50	53	55	55	55	54	54	55	55	55	53	52	54	54	55	58	61	63	64	64	60	55	53	52	55	59	—	55
Minimum	48	49	49	49	50	50	53	55	54	53	53	54	55	53	52	52	51	53	54	55	58	61	63	60	55	53	52	52	52	55	—	53
May																																
Maximum	62	65	66	69	70	73	74	75	75	75	75	74	74	75	75	74	74	74	75	75	75	77	78	80	80	80	80	80	77	74	74	74
Minimum	59	62	65	66	69	70	73	73	75	75	73	74	73	74	74	74	74	73	74	75	74	75	77	78	80	80	80	77	74	74	73	73
June																																
Maximum	75	76	76	77	78	79	79	79	80	82	83	83	83	83	82	79	79	79	80	80	81	81	81	82	82	82	83	85	85	85	—	81
Minimum	74	75	76	75	77	78	79	79	79	80	82	82	82	82	79	78	79	79	79	80	80	81	81	81	82	81	81	83	84	85	—	80
July																																
Maximum	85	84	83	83	85	85	84	84	84	83	83	84	84	85	87	87	86	84	85	85	84	84	86	88	88	88	86	85	85	84	81	85
Minimum	84	82	82	82	83	84	83	83	83	83	83	83	83	83	85	86	84	83	83	84	82	82	83	85	87	86	85	84	81	80	78	83
August																																
Maximum	81	81	81	80	83	86	86	82	82	82	84	86	86	88	92	94	93	92	89	91	89	88	87	89	89	88	85	83	84	80	78	86
Minimum	77	76	75	75	77	79	82	80	80	80	79	78	79	81	83	85	84	85	85	81	76	77	78	80	81	78	79	80	75	74	73	79
September																																
Maximum	79	79	82	83	84	82	88	88	89	89	87	81	79	80	80	79	78	82	84	85	84	84	85	84	79	75	75	74	75	75	—	82
Minimum	75	76	76	79	79	80	81	81	83	84	81	74	76	79	79	78	76	78	81	84	84	84	84	79	75	74	72	71	73	74	—	78

GREAT MIAMI RIVER BASIN--Continued

3-2740.5. GREAT MIAMI RIVER NEAR HAMILTON, OHIO

LOCATION.--At American Materials Company private bridge at Hamilton, Butler County, about 5.5 miles below gaging station.
DRAINAGE AREA.-- 3,677 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1963 to September 1965.
REMARKS.--Samples were collected weekly October and November, July to September, and monthly December through June. Samples for iron and manganese were filtered clear when collected. Records of discharge are given for Great Miami River at Hamilton.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 7, 1964..	346	--		0.22	0.28		--	--	--		228	0	201	59	--	1.9	0.28	588	364	177		903	7.4	--
Oct. 14.......	351	--		.38	.45		--	--	--		236	0	202	58	--	1.3	.38	591	376	182		924	7.4	--
Oct. 21.......	360	--		.27	.34		--	--	--		232	0	200	58	--	2.1	.49	596	370	180		922	7.4	--
Oct. 28.......	355	--		.32	.39		--	--	--		235	0	196	56	--	.7	.64	580	366	173		903	7.3	--
Nov. 4........	346	--		.29	.26		--	--	--		276	0	168	57	--	.9	.36	583	366	140		919	7.4	--
Nov. 11.......	409	--		.20	.06		--	--	--		242	0	170	50	--	.0	.35	539	348	149		855	7.4	--
Dec. 16.......	770	6.2		1.3	.16	75	29	37	3.6		224	0	123	43	0.5	6.2	.20	450	306	123		710	7.4	5
Jan. 13,1965..	1280	6.0		.97	.16	81	32	27	3.2		242	0	124	38	.5	8.1	.16	470	334	135		736	7.6	7
Feb. 17.......	3640	6.9		.60	.21	77	28	15	2.3		220	0	96	28	.1	20	.15	396	307	127		620	7.8	20
Mar. 17.......	3750	5.8		.59	.14	79	30	16	2.2		234	0	97	30	.3	20	.16	417	321	129		665	7.8	10
Apr. 14.......	12600	5.8		1.4	.02	54	19	8.3	2.3		156	0	55	14	.2	18	.62	286	213	84		428	7.7	35
May 19........	1950	2.0		.48	.29	81	33	19	2.9		268	0	103	30	.3	6.6	.49	444	338	118		699	7.7	10
June 16.......	851	3.8		.47	.12	82	34	29	3.3		256	0	127	40	.4	5.9	.26	478	345	135		762	7.2	10
July 7........	692	--		.39	.22	--	--	--	--		232	0	132	43	--	4.8	.42	499	331	141		752	7.6	--
July 14.......	632	--		1.1	.48	--	--	--	--		190	0	138	37	--	3.4	.18	435	299	143		685	7.6	--
July 21.......	534	--		.49	.31	--	--	--	--		224	0	164	50	--	3.9	.19	538	346	162		816	7.6	--
July 28.......	486	--		.24	.24	--	--	--	--		242	0	153	51	--	2.9	.12	526	350	151		821	7.1	--
Aug. 4........	441	--		.25	.39	--	--	--	--		240	0	168	56	--	3.0	.21	552	346	149		842	7.2	--
Aug. 11.......	441	--		.54	.21	--	--	--	--		238	0	164	58	--	2.6	.24	542	352	157		859	7.6	--
Aug. 18.......	360	--		.26	.18	--	--	--	--		237	0	166	56	--	2.6	.48	559	354	160		853	7.8	--
Aug. 24.......	409	--		.24	.41	--	--	--	--		216	0	187	56	--	.8	.34	575	359	182		873	7.7	--
Aug. 31.......	305	--		.33	.30	--	--	--	--		240	0	174	54	--	.7	.53	547	352	155		953	7.6	--
Sept. 8.......	394	--		.18	.26	--	--	--	--		216	0	148	50	--	2.0	.30	497	316	139		778	7.6	--
Sept. 15......	786	--		.54	.58	--	--	--	--		198	0	101	39	--	2.1	.20	409	262	100		636	7.5	--
Sept. 22......	624	--		.23	.35	--	--	--	--		204	0	142	38	--	5.6	.52	466	312	145		712	7.6	--
Sept. 28......	468	--		.32	.31	--	--	--	--		230	0	166	47	--	5.0	.32	538	349	160		812	7.5	--

GREAT MIAMI RIVER BASIN--Continued

3-2740.5. GREAT MIAMI RIVER NEAR HAMILTON, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor[a]
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 7, 1964	3.4	36	0.018	1.0	3.0	0.60		60	M-32
Oct. 14	3.2	34	.007	1.0	4.1	.90		45	M-16
Oct. 21	3.1	31	.017	1.0	4.6	.50		30	M-8
Oct. 28	1.1	11	.008	1.0	4.0	.80		70	M-16
Nov. 4	2.5	25	.003	1.1	4.8	1.0		25	M-8
Nov. 11	3.6	37	.005	.9	3.0	.70		25	M-8
Dec. 16	6.8	56	.008	.6	1.9	.50		85	M-16
Jan. 13, 1965	8.0	68	.002	.4	.7	.40		90	M-16
Feb. 17	10.2	84	.011	.2	.6	.20		100	M-32
Mar. 17	9.4	81	.008	.2	.9	.20		85	M-128
Apr. 14	9.2	84	.006	.1	.4	.20		1200	M-32
May 19	4.6	53	.002	.2	.7	.40		100	M-32
June 16	6.2	76	.000	.2	.8	.50		40	M-2
July 7	4.2	52	.004	.2	.7	.40		--	--
July 14	6.8	89	.006	.2	.4	.30		40	M-4
July 21	7.2	91	.011	.3	1.0	.70		110	M-2
July 28	5.6	73	.008	.3	1.3	.30		55	M-8
Aug. 4	3.6	44	.000	.3	1.6	.60		55	M-8
Aug. 11	3.2	39	.005	.4	1.7	1.0		80	M-8
Aug. 18	2.2	28	.011	.3	1.4	.80		70	M-8
Aug. 24	4.0	50	--	.3	2.2	.50		15	M-16
Aug. 31	.9	10	.000	.4	2.3	.80		20	M-16
Sept. 8	3.0	38	.008	.3	2.2	1.0		30	M-16
Sept. 15	1.3	15	.006	.2	2.1	.70		30	M-8
Sept. 22	2.4	30	.011	.2	1.0	.70		35	M-8
Sept. 28	.8	9	.004	.3	2.1	1.0		4	M-8

a The dilution ratio at which odor is just detectable; M-musty.

GREAT MIAMI RIVER BASIN--Continued

3-2766. GREAT MIAMI RIVER AT ELIZABETHTOWN, OHIO

LOCATION.--At Lost Bridge on Lawrenceburg Road, 0.6 mile southeast of Elizabethtown, Hamilton County, 0.9 mile downstream from Whitewater River, and 5.4 miles upstream from mouth.
DRAINAGE AREA.--5,356 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1965.
Water temperatures: October 1956 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 883 micromhos Nov. 8; minimum daily, 384 micromhos Apr. 27.
Water temperatures: Maximum, 86°F July 25, Aug. 16; minimum, 33°F Feb. 3-5.
EXTREMES, 1956-65.--Specific conductance: Maximum daily, 1,090 micromhos Jan. 6, 1964; minimum daily, 296 micromhos Jan. 28, 1962.
Water temperatures: Maximum, 90°F July 23-27, Aug. 3, 1964; minimum, freezing point on several days during winter months of most years.
REMARKS.--Daily samples were collected at this station and were analyzed as follows: (1) Maximum daily specific conductance for the month, (2) minimum daily specific conductance for the month, and (3) composite of all daily samples for the month. No discharge records available.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Dissolved oxygen: Parts per million	Dissolved oxygen: Percent saturation
Oct. 9, 1964..											222	4	167	54	0.6	9.4		526	360	171		836	8.3	--	--
Oct. 17.......											222	0	179	56	1.0	15		556	369	187		870	7.4	--	--
Oct. 1-31.....											223	0	170	57	.7	12		559	360	177		866	8.2	--	--
Nov. 8........											222	2	170	58	.7	22		590	366	180		883	8.3	--	--
Nov. 25.......											210	2	146	51	.6	20		486	334	158		797	8.3	8.8	88
Nov. 1-30.....											226	0	153	56	.6	20		536	350	165		844	7.9	8.8	88
Dec. 3........											228	0	141	63	.5	17		558	338	151		842	7.4	--	--
Dec. 12.......											185	0	117	48	.5	18		446	286	134		699	7.3	--	--
Dec. 1-31.....											222	0	126	52	.5	18		506	320	138		767	8.1	10.0	84
Jan. 2, 1965..											152	0	82	24	.3	13		300	226	102		503	7.9	--	--
Jan. 22.......											256	0	126	50	.4	17		516	358	148		800	7.4	--	--
Jan. 1-31.....											216	0	108	39	.3	17		425	314	137		685	7.9	10.0	84
Feb. 6........											242	0	135	52	.4	24		548	374	175		821	7.1	--	--
Feb. 12.......											180	0	50	15	.3	7.7		264	218	70		441	7.4	--	--
Feb. 1-28.....											209	0	95	37	.4	19		410	300	129		648	7.8	11.2	100
Mar. 5........											138	0	50	22	.2	20		240	194	81		420	8.1	--	--
Mar. 22.......											246	0	108	36	.3	2.1		440	333	134		694	8.0	--	--
Mar. 1-31.....											202	0	82	30	.2	22		375	286	120		597	7.9	10.4	94
Apr. 5........											233	0	100	30	.4	23		436	326	135		677	7.7	--	--
Apr. 27.......											142	0	46	10	.3	21		238	189	72		384	7.9	--	--
Apr. 1-30.....											196	0	74	20	.3	21		329	266	105		545	7.7	8.8	89

May 2, 1965...											200	11	94	20	.2	18		374	298	115		579	8.7	--	--
May 25........											286	0	106	36	.3	9.3		456	344	109		736	7.6	--	--
May 1-31......											252	0	96	28	.2	10		413	324	117		669	8.1	7.2	86
June 3........											238	10	100	30	.3	13		418	340	128		668	8.6	--	--
June 25.......											204	4	124	40	.5	10		458	316	142		691	8.5	--	--
June 1-30.....											238	0	117	36	.5	11		459	330	135		722	7.9	6.9	131
July 18.......											202	0	107	37	.4	13		408	284	118		636	8.2	--	--
July 30.......											232	0	139	50	.5	9.6		528	340	150		763	7.7	--	--
July 1-31.....											226	0	125	45	.5	11		456	320	135		716	8.1	9.8	122
Aug. 25.......											232	0	132	46	.5	8.9		518	328	138		735	8.2	--	--
Aug. 28.......											228	0	153	54	.6	11		522	348	161		794	8.1	--	--
Aug. 1-31.....											228	0	141	52	.5	9.8		528	334	147		772	8.0	9.0	107
Sept. 4.......											204	0	161	54	.5	17		530	342	175		809	8.0	--	--
Sept. 18......											182	0	73	34	.3	14		328	234	85		553	8.1	--	--
Sept. 1-30....											218	0	125	48	.4	15		446	318	139		738	7.6	8.9	61

GREAT MIAMI RIVER BASIN--Continued

3-2766. GREAT MIAMI RIVER AT ELIZABETHTOWN, OHIO--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	850	862	826	731	702	640	653	602	665	740	773	746
2.....	842	866	813	503	739	616	667	579	664	712	757	782
3.....	852	868	842	528	760	514	640	628	668	730	767	788
4.....	856	870	814	509	785	505	676	641	698	736	792	809
5.....	844	870	758	556	802	420	677	650	646	736	765	796
6.....	848	870	761	654	821	467	582	662	694	742	776	800
7.....	848	878	769	645	810	514	468	668	672	729	742	804
8.....	836	883	774	680	580	527	567	649	698	708	737	788
9.....	866	864	800	680	570	538	448	676	696	685	756	779
10.....	858	862	787	657	473	530	474	665	727	668	778	753
11.....	864	840	747	711	487	548	466	657	700	690	757	772
12.....	856	844	699	718	441	583	471	636	717	686	752	718
13.....	850	839	700	725	446	616	440	649	685	685	774	599
14.....	858	854	731	734	512	614	439	712	713	674	774	672
15.....	868	835	748	737	563	623	461	674	713	652	784	728
16.....	870	833	748	743	594	647	487	702	723	668	747	690
17.....	842	820	728	744	626	655	555	712	699	685	779	679
18.....	858	835	742	747	648	649	564	673	685	636	774	553
19.....	844	820	767	747	658	654	624	693	700	672	779	601
20.....	840	835	770	781	679	658	624	693	709	714	763	612
21.....	848	852	777	758	690	686	641	680	712	714	776	641
22.....	852	839	795	800	686	694	646	675	710	712	749	679
23.....	866	829	816	770	698	681	652	679	724	762	741	705
24.....	866	804	814	705	698	624	494	720	703	740	758	713
25.....	862	797	795	662	688	598	587	736	691	716	735	746
26.....	860	833	742	618	648	609	389	698	687	722	776	731
27.....	842	846	732	621	609	595	384	612	721	733	779	738
28.....	862	806	736	635	602	605	437	621	734	748	794	753
29.....	852	804	782	657	--	613	503	605	733	760	768	784
30.....	864	802	745	683	--	626	563	624	696	763	757	793
31.....	--	--	744	710	--	628	--	647	--	757	771	--
Average	854	842	767	682	643	596	542	661	699	712	765	725

GREAT MIAMI RIVER BASIN--Continued

3-2766. GREAT MIAMI RIVER AT ELIZABETHTOWN, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	67	69	68	66	63	62	63	59	56	56	56	58	60	62	64	63	65	60	60	57	59	57	56	58	56	57	62	62	61	60	60	61
November	60	61	62	60	61	60	60	57	58	58	60	61	60	57	59	59	58	57	54	49	45	43	43	44	46	47	48	51	48	45	--	54
December	43	43	45	46	45	44	43	43	43	44	45	49	50	46	45	43	44	39	38	40	41	41	45	51	49	49	47	46	47	53	49	45
January	48	46	47	44	44	45	47	49	48	47	44	45	43	41	40	36	34	35	35	38	38	40	42	46	47	46	41	40	35	35	34	42
February	34	34	33	33	33	38	42	43	40	44	46	45	44	42	42	43	45	46	45	45	43	40	39	39	36	34	38	42	--	--	--	40
March	46	47	46	46	40	40	40	40	41	41	40	43	44	43	45	--	49	47	44	43	42	44	46	44	43	41	42	43	47	46	48	44
April	52	49	49	50	52	55	57	55	54	54	55	55	55	54	54	53	56	57	58	60	63	65	67	60	58	53	52	53	55	63	--	56
May	63	63	68	66	70	72	75	72	75	75	76	74	72	73	74	75	75	73	75	73	75	79	77	81	81	81	79	75	73	73	76	74
June	76	76	74	77	77	79	79	77	80	82	81	84	81	79	75	76	76	76	77	73	77	78	79	80	80	79	82	84	84	80	--	79
July	82	76	80	82	83	80	81	83	81	80	81	83	84	84	85	82	80	83	84	83	83	83	83	84	86	85	83	84	81	79	77	82
August	76	75	76	77	79	82	80	77	80	79	79	79	80	83	85	86	85	84	84	82	79	79	79	80	80	80	79	78	75	74	73	79
September	73	74	76	78	78	78	80	80	81	82	75	70	71	75	73	73	76	79	80	80	80	80	78	71	69	70	67	69	71	70	--	75

OHIO RIVER MAIN STEM

3-2772. OHIO RIVER AT MARKLAND DAM, NEAR WARSAW, KY.

LOCATION.--About 1,000 feet upstream from Dam (mile 531.5), 0.2 mile upstream from site of lock and dam 39, 0.4 mile upstream from Stevens Creek, 1.4 miles downstream from Craigs Creek, and 3.5 miles west of Warsaw, Gallatin County.

DRAINAGE AREA.--83,200 square miles.

RECORDS AVAILABLE.--Chemical analyses: October 1959 to September 1965.
Water temperatures: October 1959 to September 1965.

EXTREMES, 1964-65.--Specific conductance: Maximum daily, 777 micromhos Dec. 4; minimum daily, 206 micromhos Mar. 29.
Water temperatures: Maximum, 84°F July 25,26; minimum, 34°F Feb. 4, 5.

EXTREMES, 1959-65.--Specific conductance: Maximum daily, 810 micromhos Oct. 21, 1962; minimum daily, 167 micromhos Mar. 3, 1962.
Water temperatures: Maximum, 88°F July 14, 1962; minimum, freezing point on many days during winter months.

REMARKS.--Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, and (3) maximum daily specific conductance for each 10-day period. No discharge records available.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Detergent (MBAS)
Oct. 9, 1964..						63	16				46	0	171	63	0.3	12	--	420	223	186		658	7.5	--
Oct. 11.......						--	--				--	--	167	--	--	--	0.16	--	--	--		646	7.1	0.1
Oct. 21.......						--	--				--	--	140	--	--	--	.18	--	--	--		651	6.8	.1
Oct. 31.......						54	15				52	0	144	60	.3	2.6	--	372	196	154		591	7.2	--
Nov. 7........						65	11				53	0	120	100	.3	10	--	415	207	164		676	7.6	--
Nov. 11.......						--	--				--	--	109	--	--	--	.22	--	--	--		616	7.2	.1
Nov. 21.......						36	10				54	0	94	36	.2	7.2	--	246	131	87		411	7.5	--
Nov. 27.......						--	--				--	--	130	--	--	--	.21	--	--	--		552	7.0	.1
Dec. 4........						69	12				44	0	172	102	.4	8.5	--	470	222	186		777	7.1	--
Dec. 11.......						--	--				--	--	130	--	--	--	.17	--	--	--		490	7.3	.1
Dec. 26.......						--	--				--	--	90	--	--	--	.14	--	--	--		355	7.5	.1
Dec. 30.......						29	7.9				36	0	68	22	.2	4.6	--	180	105	76		297	7.3	--
Jan. 2, 1965..						--	--				--	--	77	--	--	--	.08	--	--	--		311	7.2	.0
Jan. 12.......						--	--				--	--	79	--	--	--	.07	--	--	--		291	7.2	.0
Jan. 15.......						21	7.2				27	0	61	16	.1	4.3	--	152	82	60		231	7.0	--
Jan. 31.......						31	11				37	0	78	26	.3	7.3	--	236	123	92		343	7.1	--
Feb. 1........						34	8.8				34	0	80	26	.1	5.8	--	215	121	93		334	6.6	--
Feb. 11.......						--	--				--	--	60	--	--	--	.84	--	--	--		314	7.0	.0
Feb. 14.......						31	7.3				52	0	55	22	.1	6.1	--	173	108	65		278	6.9	--
Feb. 26.......						--	--				--	--	60	--	--	--	.41	--	--	--		325	6.9	.0

Mar. 9, 1965..						--	--				--	--	63	--	--	--	.16	--	--	--		333	6.9	.1
Mar. 12.......						35	9.9				51	0	74	26	.1	6.4	--	226	128	86		336	7.6	--
Mar. 25.......						--	--				--	--	60	--	--	--	.12	--	--	--		321	7.6	.1
Mar. 29.......						21	5.4				30	0	44	18	.1	3.4	--	154	74	50		206	6.7	--
Apr. 1........						23	7.5				42	0	44	12	.2	3.2	--	144	88	54		230	7.1	--
Apr. 10.......						33	11				74	0	66	15	.2	4.8	--	207	128	67		316	7.2	--
Apr. 11.......						--	--				--	--	65	--	--	--	.20	--	--	--		308	7.7	.0
Apr. 26.......						--	--				--	--	63	--	--	--	.18	--	--	--		298	7.6	.0
May 4.........						30	9.0				62	0	55	16	.1	4.4	--	173	112	61		272	7.9	--
May 10........						--	--				--	--	66	--	--	--	.22	--	--	--		320	7.3	.1
May 20........						--	--				--	--	83	--	--	--	--	--	--	--		376	--	--
May 30........						41	12				76	0	84	26	.2	4.6	--	251	152	90		394	7.1	--
June 2........						41	12				72	0	83	22	.2	4.4	--	236	152	92		386	7.2	--
June 8........						--	--				--	--	89	--	--	--	.36	--	--	--		404	--	.0
June 19.......						--	--				--	--	81	--	--	--	.37	--	--	--		433	--	.1
June 30.......						45	12				78	0	88	34	.3	5.3	--	257	162	98		442	7.7	--
July 1........						46	12				78	0	91	40	.3	6.2	--	290	165	101		448	7.6	--
July 10.......						--	--				--	--	98	--	--	--	.27	--	--	--		485	7.0	.1
July 17.......						--	--				--	--	99	--	--	--	.25	--	--	--		497	7.8	.1
July 27.......						57	14				86	0	110	58	.4	7.0	--	322	200	129		561	7.6	--
Aug. 1........						--	--				--	--	87	--	--	--	.24	--	--	--		469	--	.0
Aug. 9........						37	8.8				66	0	72	34	.3	6.2	--	240	129	75		380	7.0	--
Aug. 20.......						52	13				80	0	101	58	.4	8.0	--	334	183	118		560	7.1	--
Aug. 21.......						--	--				--	--	103	--	--	--	.24	--	--	--		554	--	.0
Sept. 3.......						--	--				--	--	102	--	--	--	.28	--	--	--		564	--	.0
Sept. 7.......						42	7.8				68	0	75	38	.3	6.7	--	286	137	82		416	7.6	--
Sept. 20......						--	--				--	--	95	--	--	--	.28	--	--	--		551	--	.0
Sept. 27......						59	13				84	0	114	88	.5	8.8	--	372	201	132		622	7.6	--

OHIO RIVER MAIN STEM--Continued

3-2772. OHIO RIVER AT MARKLAND DAM, NEAR WARSAW, KY.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement between 1600 and 2000)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	649	577	615	294	334	318	230	285	388	448	469	526
2.....	642	578	662	311	308	318	242	278	386	450	468	564
3.....	618	583	700	308	303	313	242	274	387	451	464	564
4.....	617	610	777	289	296	308	244	272	388	452	464	--
5.....	615	631	775	274	296	308	263	278	388	455	468	420
6.....	605	656	765	258	306	316	277	287	394	465	462	420
7.....	644	676	584	287	311	330	273	302	400	471	435	416
8.....	655	676	546	241	325	330	--	307	404	476	393	426
9.....	658	670	479	238	334	333	313	312	403	480	380	434
10.....	654	--	462	255	331	324	316	320	400	485	388	446
11.....	646	616	490	270	314	333	308	323	402	490	398	474
12.....	640	575	489	291	314	336	295	329	404	493	443	486
13.....	636	544	481	280	289	336	--	326	412	489	459	542
14.....	638	528	462	257	278	336	281	326	416	476	488	531
15.....	629	512	456	231	--	327	240	335	--	476	523	487
16.....	624	506	396	264	--	318	233	338	419	493	536	425
17.....	624	494	419	255	311	321	254	348	423	497	543	440
18.....	628	482	--	257	311	321	261	351	428	--	545	497
19.....	628	460	--	253	303	324	271	358	433	495	556	537
20.....	643	433	355	255	298	321	277	376	431	493	560	551
21.....	651	411	307	270	298	305	279	381	428	486	554	559
22.....	648	--	302	272	306	302	271	393	429	484	552	572
23.....	630	440	320	276	306	313	263	393	425	495	546	588
24.....	611	460	329	264	291	313	267	384	420	495	541	588
25.....	609	487	351	296	294	321	277	379	421	512	549	590
26.....	609	528	355	--	325	316	298	383	--	536	542	610
27.....	609	552	351	280	316	316	298	386	427	561	549	622
28.....	616	503	309	325	319	--	281	388	430	556	550	606
29.....	607	516	302	319	--	206	281	393	431	556	553	591
30.....	612	551	297	319	--	220	279	394	442	513	552	610
31.....	591	--	297	343	--	211	--	--	--	477	533	--
Average	628	544	463	277	308	309	271	339	412	490	498	521

OHIO RIVER MAIN STEM--Continued

3-2772. OHIO RIVER AT MARKLAND DAM, NEAR WARSAW, KY.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 1600 and 2000)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	72	72	71	71	71	71	69	69	69	69	65	66	65	65	65	65	65	65	64	64	64	64	64	64	62	61	61	61	61	61	60	66
November	60	60	61	61	61	60	60	60	60	--	60	60	60	60	60	60	60	60	60	58	56	--	55	55	55	54	54	54	50	52	--	58
December	50	50	51	51	50	49	47	47	47	47	47	47	47	46	46	45	46	--	--	42	42	42	42	43	44	43	43	44	43	46	45	46
January	45	44	44	44	44	44	44	44	45	43	43	44	43	42	42	42	41	39	38	40	39	39	39	39	40	--	39	38	38	38	38	41
February	37	37	35	34	34	35	35	36	37	38	38	38	38	38	--	--	38	38	40	41	41	41	41	41	41	41	41	39	--	--	--	38
March	40	41	41	41	40	40	40	40	40	41	42	41	42	42	42	42	42	42	42	42	43	44	45	44	44	45	45	--	45	45	45	42
April	46	46	47	48	49	44	49	--	59	53	53	59	--	57	57	57	59	59	56	56	59	59	60	60	59	59	59	59	59	60	--	55
May	61	62	60	60	62	62	63	63	61	66	68	68	68	68	68	71	71	71	71	72	76	76	73	74	74	74	74	75	75	75	--	69
June	75	76	76	75	75	75	75	78	78	78	78	79	76	76	--	76	76	78	78	79	77	77	77	77	77	--	77	77	78	78	--	77
July	78	79	79	80	80	81	81	81	81	82	82	82	82	--	82	83	82	--	83	83	82	82	83	83	84	84	--	--	--	--	--	--
August	81	81	81	79	80	80	80	80	80	78	78	79	79	79	81	82	82	82	82	80	80	81	81	81	82	82	82	81	81	80	80	80
September	80	78	78	--	78	75	75	78	74	80	80	75	75	77	75	75	72	72	75	76	76	75	76	75	75	74	74	75	75	74	--	76

KENTUCKY RIVER BASIN

3-2775. NORTH FORK KENTUCKY RIVER AT HAZARD, KY.

LOCATION.--At gaging station at Woodland Park Bridge at eastern limits of Hazard, Perry County, 150 feet upstream from city waterworks dam, and 4.0 miles upstream from Lotts Creek.

DRAINAGE AREA.--466 square miles.

RECORDS AVAILABLE.--Chemical analyses: November 1949 to August 1950, August 1957 to September 1959 (periodic), October 1962 to September 1965.
Water temperatures: October 1949 to September 1965.

EXTREMES, 1964-65.--Specific conductance: Maximum daily, 786 micromhos July 25; minimum daily, 161 micromhos Nov. 28.
Water temperatures: Maximum, 89°F Aug. 18; minimum, freezing point on several days during December to February.

EXTREMES, 1949-65.--Specific conductance (1962-65): Maximum daily, 1,720 micromhos Dec. 19, 20, 1962; minimum daily, 128 micromhos Apr. 6, 1964.
Water temperatures: Maximum, 93°F Aug. 1, 1953; minimum, freezing point on many days during winter months.

REMARKS.--Values reported for iron in solution when analyzed. Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) maximum daily turbidity for each month, and (4) a composite analysis of all daily samples for each month. A composite sample only was made for February. For the months of January, March, and June the maximum turbidity occurred on same day as the minimum conductance for the month. No samples were collected for the month of October. Small diversion by city of Hazard waterworks and electric plant above station.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Turbidity
Nov. 6, 1964..	150	8.6	--						0	337	10			520	269	269	A1.6	732	3.9	8	--
Nov. 17.......	--	--	--						--	--	--			--	--	--	--	--	--	--	310
Nov. 28.......	890	8.6	--						22	46	3.0			120	58	40	--	161	7.1	8	--
Nov. 1-30.....	401	--	--						--	--	--			207	--	--	--	323	--	--	--
Dec. 1........	399	7.4	0.14						22	60	2.0			113	65	47	--	183	7.1	2	--
Dec. 2........	--	--	--						--	--	--			--	--	--	--	--	--	--	200
Dec. 22.......	519	2.9	.22						30	94	4.0			168	112	88	--	278	7.3	3	--
Dec. 1-31.....	1004	--	--						--	--	--			150	--	--	--	239	--	--	--
Jan. 7, 1965..	519	1.7	.04						32	120	7.0			217	137	111	--	333	6.7	0	--
Jan. 17.......	630	7.1	.09						19	61	2.0			109	64	48	--	180	7.1	13	180
Jan. 1-31.....	1106	--	--						--	--	--			161	--	--	--	241	--	--	--
Feb. 1, 4-15..	595	5.4	.00						26	83	4.0			150	90	68	--	249	7.0	2	--
Mar. 8........	854	6.5	.00						36	88	4.0			170	97	68	--	273	7.0	2	--
Mar. 18.......	470	6.8	.01						4	66	.0			116	64	61	--	174	6.4	5	4000
Mar. 1-21, 29-30..........	960	--	--						--	--	--			138	--	--	--	220	--	--	--
Apr. 1........	1790	8.7	.01						26	54	2.5			110	64	42	--	173	7.2	15	--
Apr. 22.......	--	--	--						--	--	--			--	--	--	--	--	--	--	80
Apr. 23.......	506	9.9	.02						50	112	2.5			184	136	95	--	319	7.3	25	--
Apr. 1-30.....	1195	--	--						--	--	--			157	--	--		264	--	--	--
May 4.........	263	6.0	.03						42	82	3.0			144	92	58	--	255	7.4	5	--
May 15........	--	--	--						--	--	--			--	--	--	--	--	--	--	650

May 17, 1965..	114	5.7	.09						0	239	8.0			361	206	206	.2	538	4.4	5	--
May 4-31......	219	--	--						--	--	--			269	--	--	--	387	--	--	--
June 4........	144	6.0	.45						54	111	5.0			220	119	75	--	353	7.4	4	1000
June 28.......	36	5.2	.00						61	268	8.0			468	257	207	--	671	7.5	5	--
June 1-30.....	75.6	--	--						--	--	--			347	--	--	--	517	--	--	--
July 12.......	452	7.2	.19						47	135	6.0			250	123	84	--	386	7.6	40	3900
July 25.......	30	4.2	.02				60	3.6	74	307	18			544	272	211	--	786	7.8	5	--
July 1-31.....	72.4	--	--						--	--	--			386	--	--	--	587	--	--	--
Aug. 2........	14	6.4	.03						49	284	20			478	265	225	--	731	7.6	5	--
Aug. 12.......	7.0	6.3	.26						72	114	8.0			232	141	82	--	379	7.7	15	--
Aug. 21.......	--	--	--						--	--	--			--	--	--	--	--	--	--	2100
Aug. 1-4, 6-31	31.9	--	--						--	--	--			312	--	--	--	472	--	--	--
Sept. 1.......	--	--	--						--	--	--			--	--	--	--	--	--	--	45
Sept. 2.......	18	7.3	.02						82	138	9.0			236	175	108	--	449	7.7	5	--
Sept. 23......	18	5 8	.00						28	336	16			556	299	276	--	784	7.2	5	--
Sept. 1-30....	20.0	--	--						--	--	--			418	--	--	--	630	--	--	--

A Potential free acidity

KENTUCKY RIVER BASIN--Continued

3-2775. NORTH FORK KENTUCKY RIVER AT HAZARD, KY.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	--	308	183	206	239	234	173	--	452	556	730	464
2......	--	222	230	202	--	211	173	--	458	--	731	449
3......	--	258	238	203	--	231	--	--	488	567	718	499
4......	--	270	223	196	209	215	225	255	353	719	724	501
5......	--	222	233	--	217	211	246	297	--	690	--	450
6......	--	732	--	196	200	216	207	257	--	686	472	501
7......	--	331	232	333	197	271	243	309	420	576	464	450
8......	--	322	225	324	200	273	233	341	456	424	--	--
9......	--	363	236	284	313	271	212	344	--	422	466	583
10......	--	360	--	246	305	217	296	312	574	392	381	590
11......	--	372	--	244	--	198	301	358	468	392	--	715
12......	--	394	--	282	275	182	301	510	444	591	379	545
13......	--	397	194	--	--	206	253	451	408	410	379	589
14......	--	372	--	--	273	198	298	443	408	388	384	711
15......	--	430	--	204	269	182	282	534	486	--	384	705
16......	--	431	228	181	--	174	306	385	493	402	381	682
17......	--	296	--	180	--	223	306	538	490	405	421	621
18......	--	372	264	215	--	--	311	332	492	711	449	631
19......	--	374	--	239	--	224	306	332	460	568	423	681
20......	--	362	266	--	--	225	--	335	539	665	448	682
21......	--	206	--	265	--	247	249	378	490	--	424	774
22......	--	199	278	--	--	--	249	382	508	548	449	--
23......	--	189	--	239	--	--	319	394	542	582	412	784
24......	--	229	--	239	--	--	278	--	528	713	413	782
25......	--	176	--	--	--	--	278	394	554	786	414	782
26......	--	229	278	300	--	--	246	381	670	--	414	635
27......	--	190	--	238	--	--	280	--	624	650	465	734
28......	--	161	270	--	--	--	274	--	671	650	464	--
29......	--	228	--	233	--	175	--	425	626	729	464	734
30......	--	238	--	263	--	271	256	425	626	723	464	731
31......	--	--	199	236	--	--	--	487	--	--	464	--
Average	--	307	--	239	--	--	263	383	508	574	470	629

KENTUCKY RIVER BASIN--Continued

3-2775. NORTH FORK KENTUCKY RIVER AT HAZARD, KY.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0700 and 1700)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
0700.......	69	68	65	66	64	56	58	56	57	58	55	53	56	54	52	54	55	56	--	--	55	56	54	51	50	48	51	53	55	55	53	56
1700.......	70	68	76	66	64	59	60	58	58	55	55	54	54	52	54	56	56	55	--	--	55	56	55	53	52	50	55	55	56	55	55	57
November																																
0700.......	50	50	49	50	48	50	52	55	51	48	49	50	48	54	52	53	52	57	56	54	45	40	38	38	48	48	49	50	45	42	--	49
1700.......	54	52	53	52	50	55	55	56	54	50	50	52	56	56	54	54	56	56	56	53	44	40	39	40	48	50	50	51	46	42	--	51
December																																
0700.......	35	32	34	45	50	48	46	45	38	38	42	40	40	40	40	32	34	32	32	32	32	40	42	44	47	49	50	51	48	55	54	42
1700.......	35	33	40	50	50	49	46	45	40	42	42	42	41	42	40	36	34	33	32	32	38	44	46	48	50	50	54	52	56	57	56	44
January																																
0700.......	52	52	54	48	50	53	48	54	54	44	44	42	44	40	35	42	34	32	32	32	32	34	40	40	44	43	40	38	37	40	36	42
1700.......	50	54	56	50	56	57	52	57	54	48	44	46	46	39	42	44	34	32	32	34	36	38	42	44	47	46	41	40	40	44	40	45
February																																
0700.......	34	33	32	32	32	32	34	36	40	38	39	40	46	40	39	38	40	40	36	36	36	33	34	38	36	38	38	38	--	--	--	37
1700.......	36	33	32	32	32	32	34	40	42	39	39	48	46	42	40	38	40	40	38	42	37	34	40	40	36	37	40	40	--	--	--	38
March																																
0700.......	40	40	45	40	38	39	36	38	39	36	39	40	40	40	40	43	46	46	47	46	40	38	42	44	42	42	42	44	45	44	45	41
1700.......	44	49	49	40	40	39	36	42	42	39	40	41	44	42	40	48	48	48	47	46	40	44	46	44	42	44	44	46	46	46	47	44
April																																
0700.......	47	50	52	42	44	50	50	54	57	52	54	64	65	60	64	55	56	58	57	60	62	61	66	66	66	65	66	60	58	55	--	57
1700.......	51	54	56	44	47	59	56	59	58	59	66	66	67	62	64	58	60	60	61	62	65	66	69	71	68	66	66	62	61	60	--	61
May																																
0700.......	60	62	65	74	76	78	79	80	79	80	80	82	71	80	82	82	74	72	76	69	72	74	75	78	77	79	76	75	75	75	80	75
1700.......	66	66	74	78	80	82	80	82	80	82	84	80	80	86	86	86	79	78	74	70	74	76	79	77	79	79	79	78	76	79	82	78
June																																
0700.......	79	79	78	75	75	75	75	76	78	74	79	80	80	75	74	70	74	72	76	75	78	82	84	83	77	72	76	78	79	80	--	77
1700.......	79	80	79	78	82	78	78	78	76	80	80	82	83	79	76	74	76	76	78	78	80	85	87	87	78	76	78	82	80	85	--	80
July																																
0700.......	79	79	80	77	78	76	74	78	78	78	76	76	72	78	79	80	80	76	79	78	80	80	82	82	81	82	81	80	80	79	78	79
1700.......	82	86	83	79	79	78	79	79	82	81	79	79	79	81	80	81	82	79	81	82	80	82	82	84	82	83	84	82	80	81	79	81
August																																
0700.......	78	64	66	66	68	69	70	76	78	79	78	77	80	80	86	82	84	84	85	84	84	80	79	81	78	78	78	76	69	68	76	77
1700.......	80	68	68	70	72	79	74	79	82	81	80	82	83	84	88	86	88	89	88	86	85	84	83	84	82	80	79	79	72	75	74	80
September																																
0700.......	74	70	70	69	73	75	80	82	82	80	80	80	79	76	72	70	69	70	72	76	81	84	82	79	74	76	74	69	70	72	--	75
1700.......	76	73	74	72	78	79	82	86	86	82	86	84	79	79	76	74	72	75	76	88	86	87	84	79	80	78	77	73	72	74	--	79

KENTUCKY RIVER BASIN--Continued

3-2862. DIX RIVER AT DIX DAM, NEAR BURGIN, KY.

LOCATION.--Temperature recorder at stage station on left bank, 400 feet upstream from Dix Dam spillway outlet, 0.6 mile downstream from powerhouse (at toe of dam), 2.4 miles upstream from mouth, and 4.4 miles northeast of Burgin, Mercer County.
DRAINAGE AREA.--439 square miles.
RECORDS AVAILABLE.--Water temperatures: November 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 54°F Oct. 10-18, Aug. 22-27; minimum, 43°F Apr. 10-30.
EXTREMES, 1962-65.--Water temperatures: Maximum, 59°F June 18, 1964; minimum, 41°F on many days during January to April 1963, February and March 1964.
REMARKS.--Flow regulated by Herrington Lake.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	53	53	53	53	53	53	53	53	53	54	54	54	54	54	54	54	54	54	53	53	53	53	53	53	52	52	52	52	53	53	53	53
Minimum	53	53	53	53	52	52	53	53	53	53	53	53	54	54	54	54	54	53	53	52	52	53	52	52	51	52	52	52	52	53	53	53
November																																
Maximum	53	53	53	53	53	53	53	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	--	52
Minimum	53	53	53	53	53	53	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	--	52
December																																
Maximum	52	52	52	52	52	51	51	51	51	51	51	51	51	50	50	50	50	50	50	50	50	50	50	50	50	49	49	49	49	49	49	50
Minimum	52	51	51	51	51	51	51	51	51	51	51	51	50	50	50	50	50	50	50	50	50	50	50	50	49	49	49	49	49	49	49	50
January																																
Maximum	49	49	48	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
Minimum	49	48	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	46	24
February																																
Maximum	46	46	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	44	44	44	44	44	44	44	44	44	--	--	--	45
Minimum	46	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	44	44	44	44	44	44	44	44	44	44	--	--	--	45
March																																
Maximum	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
Minimum	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
April																																
Maximum	44	44	44	44	44	44	44	44	44	44	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	44	--	43
Minimum	44	44	44	44	44	44	44	44	44	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	--	43
May																																
Maximum	44	44	44	44	44	45	45	45	45	45	45	45	45	45	45	45	46	46	46	46	46	46	46	46	46	46	46	47	47	47	47	45
Minimum	44	44	44	44	44	44	45	45	45	45	45	45	45	45	45	45	45	46	46	46	46	46	46	46	46	46	46	46	47	47	47	45
June																																
Maximum	48	48	48	48	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	50	50	50	51	51	51	51	51	51	--	49
Minimum	47	48	48	48	48	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	50	50	50	51	51	51	51	51	--	49
July																																
Maximum	51	51	51	51	51	52	52	52	52	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
Minimum	51	51	51	51	51	51	52	52	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
August																																
Maximum	51	51	52	52	53	53	53	53	53	53	53	53	53	52	52	52	52	53	53	53	53	54	54	54	54	54	54	53	53	53	53	53
Minimum	51	51	51	52	52	53	53	53	53	53	53	53	52	52	52	52	52	52	53	53	53	53	54	54	54	54	53	53	53	53	53	53
September																																
Maximum	53	53	53	53	53	53	52	52	52	52	52	52	52	52	52	52	53	52	53	53	53	53	53	53	53	52	53	53	53	53	--	53
Minimum	53	53	53	53	53	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	53	53	52	52	52	52	52	51	--	52

KENTUCKY RIVER BASIN--Continued

3-2875. KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.

LOCATION.--At gaging station at Broadway Street Bridge at Frankfort, Franklin County, 300 feet upstream from Benson Creek, 0.9 mile upstream from lock 4, and at mile 65.9.
DRAINAGE AREA.--5,412 square miles (including that of Benson Creek), of which about 120 square miles does not contribute directly to surface runoff.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1965.
Water temperatures: October 1949 to September 1965.
Sediment records: October 1952 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 635 micromhos July 26; minimum daily, 120 micromhos Mar. 29.
Water temperatures: Maximum, 84°F Aug. 16; minimum, 39°F Feb. 3-6.
Sediment concentrations: Maximum daily, 981 ppm Mar. 27; minimum daily, 4 ppm July 1.
Sediment loads: Maximum daily, 141,000 tons Mar. 29; minimum daily, 4 tons July 1.
EXTREMES, 1949-65.--Specific conductance: Maximum daily, 635 micromhos July 26, 1965; minimum daily, 71 micromhos Dec. 30, 1961.
Water temperatures: Maximum, 88°F July 22, 1957; minimum, freezing point on several days during January and February 1961.
Sediment concentrations (1952-65): Maximum daily, 2,420 ppm Jan. 31, 1956; minimum daily, 1 ppm on many days during 1952-56, 1962, 1964.
Sediment loads (1952-65): Maximum daily, 420,000 tons Feb. 28, 1962; minimum daily, 1 ton on many days during 1952-56, 1962, 1964.
REMARKS.--Values reported for iron are in solution when analyzed. Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) maximum daily turbidity for each month, and (4) composite of all daily samples for each month. Flow partly regulated by Buckhorn Reservoir, Herrington Lake, and hydroelectric plant at lock 7.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color	Turbidity
Oct. 1, 1964	3800	6.9	0.01					54	50	83			285	149	105	507	7.6	5	--
Oct. 11	--	--	--					--	--	--			--	--	--	--	--	--	280
Oct. 23	1400	8.8	.14					40	43	7.5			116	72	39	193	7.2	--	--
Oct. 1-31	2947	--	--					--	--	--			166	--	--	288	--	--	--
Nov. 14	654	5.7	.05					42	41	8.0			105	77	42	196	7.1	10	--
Nov. 24	--	--	--					--	--	--			--	--	--	--	--	--	25
Nov. 30	5620	8.5	.01					56	54	34			195	105	59	321	7.3	5	--
Nov. 1-30	2274	--	--					--	--	--			124	--	--	211	--	--	--
Dec. 1	4090	11	.01					70	62	107			339	167	110	583	7.6	5	--
Dec. 5	--	--	--					--	--	--			--	--	--	--	--	--	500
Dec. 22	4720	6.3	.05					50	28	10			106	72	31	178	7.6	10	--
Dec. 1-31	11490	--	--					--	--	--			146	--	--	257	--	--	--
Jan. 12, 1965	--	--	--					--	--	--			--	--	--	--	--	--	600
Jan. 13	36500	5.8	.32					40	21	6.0			80	54	21	137	7.1	25	--
Jan. 31	5920	6.0	.06					60	38	18			130	92	43	239	7.3	2	--
Jan. 1-31	13100	--	--					--	--	--			114	--	--	195	--	--	--
Feb. 13	16300	6.7	.03					80	33	23			170	112	46	287	7.5	5	--
Feb. 14	--	--	--					--	--	--			--	--	--	--	--	--	130

KENTUCKY RIVER BASIN--Continued

3-2875. KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color	Turbidity
Feb. 24, 1965......	3160	6.9	0.01					63	29	10			127	85	34	200	7.4	5	--
Feb. 1-28..........	8173	--	--					--	--	--			136	--	--	235	--	--	--
Mar. 2.............	10500	6.6	.03					78	32	14			142	102	38	248	7.6	8	--
Mar. 27............	--	--	--					--	--	--			--	--	--	--	--	--	1200
Mar. 29............	58500	5.6	.14					36	23	3.0			72	50	20	120	7.1	50	--
Mar. 1-31..........	20280	--	--					--	--	--			120	--	--	203	--	--	--
Apr. 2.............	27800	9.0	.08					36	23	5.0			89	56	26	124	7.0	35	--
Apr. 4.............	--	--	--					--	--	--			--	--	--	--	--	--	550
Apr. 29............	12600	10	.04					82	23	5.0			138	109	42	209	8.0	12	--
Apr. 1-30..........	15790	--	--					--	--	--			94	--	--	178	--	--	--
May 3..............	5320	9.9	.04					77	26	16			142	91	28	228	7.8	5	--
May 12.............	1690	7.2	.01					70	29	10			117	86	28	205	7.6	5	--
May 19.............	--	--	--					--	--	--			--	--	--	--	--	--	30
May 1-31...........	2349	--	--					--	--	--			125	--	--	217	--	--	--
June 1.............	880	7.4	.03					74	31	13			134	93	32	227	7.6	5	--
June 6.............	--	--	--					--	--	--			--	--	--	--	--	--	100
June 30............	766	4.1	.00					74	33	20			138	95	34	250	7.6	2	--
June 1-30..........	848	--	--					--	--	--			136	--	--	240	--	--	--
July 6.............	880	4.0	.01					88	31	14			157	104	32	253	7.3	8	400
July 26............	20900	9.1	.00					68	59	124			377	168	113	635	7.6	3	--
July 1-30..........	2831	--	--					--	--	--			162	--	--	300	--	--	--
Aug. 2.............	785	7.8	.00					56	60	26			187	106	60	314	7.5	9	--
Aug. 11............	--	--	--					--	--	--			--	--	--	--	--	--	25
Aug. 30............	1110	6.7	.03					50	22	10			110	62	21	161	7.5	18	--
Aug. 2-24, 27-30...	636	--	--					--	--	--			145	--	--	244	--	--	--
Sept. 1............	--	--	--					--	--	--			--	--	--	--	--	--	95
Sept. 2............	2620	7.6	.20					59	19	8.0			132	74	26	170	7.7	30	--
Sept. 14...........	583	5.6	.02					101	26	8.0			164	114	31	244	7.5	10	--
Sept. 1-30.........	999	--	--					--	--	--			118	--	--	214	--	--	--

KENTUCKY RIVER BASIN--Continued

3-2875. KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	507	200	583	176	261	244	133	216	227	254	--	170
2......	404	207	579	184	250	248	124	216	233	254	314	170
3......	--	200	--	180	231	248	--	228	233	258	306	189
4......	298	199	284	189	230	230	164	--	247	258	--	199
5......	409	203	260	199	230	243	173	213	240	260	289	201
6......	--	202	254	204	228	225	168	208	230	253	289	--
7......	365	200	249	208	--	--	176	208	228	260	289	200
8......	--	202	249	203	237	200	169	217	230	267	278	197
9......	267	199	264	--	230	196	--	212	228	267	273	201
10......	293	198	--	215	232	192	186	--	245	269	254	--
11......	271	200	275	215	237	195	180	207	237	275	244	198
12......	275	205	--	238	259	194	164	205	239	282	240	198
13......	290	198	--	137	287	194	179	206	240	286	244	229
14......	332	196	217	--	253	195	184	206	242	282	244	244
15......	348	204	241	157	247	195	--	207	243	282	242	--
16......	362	203	229	--	--	--	161	207	243	277	247	222
17......	362	199	--	177	227	212	168	207	242	273	237	244
18......	365	--	213	173	217	206	160	--	242	271	212	222
19......	--	202	194	177	222	--	175	215	240	267	226	236
20......	286	197	--	176	217	209	192	210	240	269	231	220
21......	222	--	187	182	206	225	176	208	245	265	212	239
22......	196	202	178	183	205	214	--	211	247	--	214	234
23......	193	207	184	--	203	--	--	216	243	265	207	234
24......	195	224	186	--	200	235	195	218	245	265	208	213
25......	195	222	216	192	--	228	206	218	245	302	--	--
26......	196	240	207	--	208	217	202	225	247	635	--	192
27......	196	236	238	207	210	152	--	222	248	313	171	199
28......	202	--	246	213	235	--	202	222	247	463	166	199
29......	202	249	241	215	--	120	209	224	250	444	170	202
30......	203	321	222	218	--	147	--	222	250	362	161	--
31......	--	--	195	239	--	168	--	224	--	--	--	--
Average	285	211	255	194	230	205	--	214	240	299	237	210

KENTUCKY RIVER BASIN--Continued

3-2875. KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	66	66	66	63	64	65	66	65	65	64	62	61	60	60	61	61	63	61	61	61	60	61	60	59	58	58	58	58	58	58	57	61
Minimum	66	66	63	61	61	64	65	65	64	62	61	60	60	60	60	61	60	60	61	60	60	60	59	58	57	57	57	58	58	57	56	61
November																																
Maximum	57	57	58	58	59	58	57	56	56	56	56	56	56	57	57	57	57	57	57	56	56	54	52	50	51	51	51	52	52	51	--	55
Minimum	57	57	57	57	57	57	56	56	55	56	56	56	56	56	57	57	57	57	56	56	54	52	50	50	50	51	51	51	51	50	--	55
December																																
Maximum	50	48	48	49	49	48	48	47	46	46	46	48	48	49	48	47	45	45	45	44	44	43	43	45	46	47	47	47	46	46	47	47
Minimum	48	48	48	48	48	48	47	46	46	45	45	46	47	48	47	45	45	45	43	43	43	43	43	43	45	46	47	46	45	45	46	46
January																																
Maximum	48	48	48	48	47	47	46	47	48	48	47	46	46	45	45	44	44	43	42	42	42	42	41	43	43	43	44	43	43	43	--	45
Minimum	47	48	48	47	47	46	46	46	47	47	46	45	45	45	44	44	43	42	42	41	41	41	41	41	42	42	43	43	43	42	--	44
February																																
Maximum	41	41	41	40	40	40	40	42	42	43	44	45	46	46	46	45	45	45	45	46	45	45	45	45	45	45	43	43	--	--	--	44
Minimum	40	40	39	39	39	39	40	40	42	42	43	44	45	45	45	44	45	45	45	45	45	45	45	45	45	43	42	42	--	--	--	43
March																																
Maximum	42	42	43	43	44	44	44	44	44	44	44	44	44	44	44	44	45	46	46	46	47	46	47	47	47	47	47	46	48	49	49	45
Minimum	41	42	42	43	43	44	44	44	44	44	44	44	44	44	44	44	44	45	46	46	46	46	46	47	47	47	46	46	46	48	49	45
April																																
Maximum	50	51	51	51	51	51	52	52	53	55	55	57	57	57	58	58	58	59	60	60	59	59	59	60	61	61	61	61	61	62	--	57
Minimum	49	50	51	51	51	51	51	52	52	53	55	55	57	57	57	58	58	58	59	59	59	59	59	59	60	60	60	61	61	61	--	56
May																																
Maximum	64	65	65	66	67	69	69	69	71	71	71	72	73	74	74	74	74	74	74	74	74	74	75	76	77	77	77	77	75	75	76	72
Minimum	62	64	65	65	66	67	69	68	69	71	71	71	71	71	72	72	73	73	72	73	73	74	74	75	76	76	76	75	74	73	73	71
June																																
Maximum	76	77	77	77	77	77	77	78	79	81	81	81	81	80	80	78	79	78	80	78	78	80	80	80	79	79	80	81	82	80	--	79
Minimum	75	75	76	75	76	77	76	76	76	77	78	78	78	78	77	76	76	76	73	76	76	76	78	78	77	77	78	79	80	79	--	77
July																																
Maximum	81	79	79	79	79	81	81	81	81	80	81	80	80	80	81	80	79	79	80	80	80	80	80	81	80	80	80	78	77	77	77	80
Minimum	77	77	77	77	77	78	79	79	79	80	79	78	80	79	79	79	77	77	77	77	77	77	79	80	75	74	78	77	77	77	76	78
August																																
Maximum	76	76	76	76	78	78	78	78	77	79	82	77	77	80	83	84	79	79	79	78	78	76	76	80	76	75	75	74	74	72	72	77
Minimum	76	76	75	74	74	76	77	77	76	76	76	75	76	77	77	78	78	77	77	76	74	74	75	74	74	74	74	74	71	70	72	75
September																																
Maximum	72	70	71	71	70	72	73	76	74	74	75	73	72	73	73	73	74	75	75	75	77	76	76	75	73	72	70	69	70	70	--	73
Minimum	65	69	68	68	69	69	69	70	72	72	73	72	71	72	73	72	72	73	74	74	75	76	75	73	72	70	69	68	68	70	--	71

KENTUCKY RIVER BASIN--Continued

3-2875. KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	3800	17	174	728	13	26	4090	15	166
2..	6540	15	265	766	12	25	3000	15	122
3..	5620	13	197	920	12	30	2890	16	125
4..	4800	12	156	1020	12	33	15700	89	S 4230
5..	5880	11	175	636	12	21	19400	110	5760
6..	6940	--	600	804	12	26	16600	353	15800
7..	13100	110	A 3900	528	13	19	12200	200	6590
8..	10100	75	B 2000	618	13	22	8740	168	3960
9..	6100	28	461	728	12	24	5960	128	2060
10..	3520	22	209	747	12	24	4840	108	1410
11..	1780	20	96	484	12	16	9120	--	2300
12..	1110	18	54	576	12	19	20400	--	38000
13..	1040	17	48	546	13	19	20700	350	B 20000
14..	861	15	35	654	13	23	19200	167	8660
15..	564	14	21	539	13	19	17700	142	6790
16..	728	13	26	600	13	21	12800	127	4390
17..	487	12	16	804	13	28	10100	--	3200
18..	370	10	10	497	13	17	7520	--	2100
19..	1130	14	S 50	1160	13	41	5230	--	1300
20..	3720	24	241	2140	13	75	4930	--	1000
21..	2920	13	102	3600	15	B 150	4630	--	800
22..	1690	13	59	6180	27	451	4720	--	650
23..	1400	13	49	6490	28	491	4340	--	440
24..	1570	13	55	4760	19	244	4170	25	281
25..	1040	13	37	3560	16	154	12000	100	A 3200
26..	1040	13	37	3600	16	156	14300	120	4630
27..	639	13	22	4460	20	B 240	21200	180	10300
28..	842	13	30	7120	30	B 600	21900	181	10700
29..	636	13	22	7340	26	515	19500	141	7420
30..	766	13	27	5620	18	273	16100	147	6390
31..	636	14	24	--	--	--	12200	114	3760
Total	91369	--	9198	68225	--	3802	356180	--	176534

Day	JANUARY			FEBRUARY			MARCH		
1..	11000	100	2970	5700	20	308	11700	39	1230
2..	11800	114	3630	5060	20	273	10500	36	1020
3..	12200	117	3850	4210	21	239	15000	47	1900
4..	12700	109	3740	3800	21	215	20200	67	3650
5..	11800	94	2990	3400	24	220	27600	184	13700
6..	10000	76	2050	3000	27	219	24400	172	11300
7..	8300	48	1080	5580	--	390	19000	120	B 6200
8..	7120	42	807	6980	28	528	15400	92	3830
9..	8260	--	1000	10400	34	955	13900	67	2510
10..	19000	82	4210	13100	39	1380	11700	49	1550
11..	32500	320	28100	14600	70	2760	11100	40	1200
12..	38800	605	63400	18200	64	3140	9980	32	862
13..	36500	600	59100	16300	80	3520	8910	31	746
14..	24000	480	B 31000	14400	92	3580	7840	27	572
15..	16000	353	15200	12600	78	2650	6800	22	404
16..	14300	260	B 10000	10100	67	1830	5790	17	266
17..	13100	209	7400	7980	54	1160	7980	49	S 1250
18..	12000	173	5600	6540	37	653	15900	72	3090
19..	10600	120	3400	5400	33	481	15900	92	3950
20..	8500	61	1400	4630	30	375	14100	102	3880
21..	6450	42	731	3920	26	275	12000	157	5090
22..	6010	38	617	3560	23	221	9700	167	4370
23..	6670	29	522	3200	20	173	8450	114	2600
24..	7020	27	512	3160	23	196	7430	82	1650
25..	7700	28	582	9220	--	2500	9360	73	1840
26..	9170	28	693	10500	48	1360	37200	748	S 81100
27..	10800	31	904	10700	36	1040	52200	981	138000
28..	10700	26	751	12600	45	1530	54700	950	B 140000
29..	9550	21	541	--	--	--	58500	893	141000
30..	7480	34	687	--	--	--	57000	691	106000
31..	5920	26	416	--	--	--	48300	458	59700
Total	405950	--	257883	228840	--	32171	628540	--	744460

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

KENTUCKY RIVER BASIN--Continued

3-2875. KENTUCKY RIVER AT LOCK 4, AT FRANKFORT, KY.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL Mean discharge (cfs)	APRIL Suspended sediment Mean concentration (ppm)	APRIL Suspended sediment Tons per day	MAY Mean discharge (cfs)	MAY Suspended sediment Mean concentration (ppm)	MAY Suspended sediment Tons per day	JUNE Mean discharge (cfs)	JUNE Suspended sediment Mean concentration (ppm)	JUNE Suspended sediment Tons per day
1..	42400	385	44100	7380	42	837	880	9	21
2..	27800	424	31800	6050	31	506	980	10	26
3..	17700	400	B 19000	5320	27	388	582	10	16
4..	14200	344	13200	4840	25	327	728	11	22
5..	12100	174	5680	4050	23	252	672	11	20
6..	10900	140	4120	3520	20	190	980	11	29
7..	11600	93	2910	3040	19	156	1080	11	32
8..	16400	81	3590	2660	16	115	1460	12	47
9..	22800	--	7100	2340	14	88	1430	13	50
10..	22600	138	8420	1630	13	57	1510	14	57
11..	19100	123	6340	1970	11	59	1240	15	50
12..	17000	150	6880	1690	10	46	1340	15	54
13..	14600	153	6030	1630	10	44	1000	15	40
14..	12400	182	6090	1540	10	42	823	15	33
15..	10700	170	B 4900	1260	10	34	600	15	24
16..	11400	97	2990	1040	10	28	600	14	23
17..	13100	63	2230	960	7	18	747	12	24
18..	16800	92	4170	1150	9	S 33	900	10	24
19..	19400	102	5340	1660	--	100	458	10	12
20..	19000	83	4260	1750	--	95	636	9	15
21..	15600	80	3370	2380	19	122	510	6	8
22..	12800	65	2250	2410	15	98	369	6	6
23..	9790	48	1270	2100	14	79	766	6	12
24..	7750	46	963	1850	11	55	654	6	11
25..	6540	51	901	1750	11	52	728	6	12
26..	12800	92	3180	1510	10	41	728	7	14
27..	18100	--	6600	1130	10	31	940	8	20
28..	16200	110	4810	1080	10	29	484	6	8
29..	12600	89	3030	1060	9	26	861	6	14
30..	9550	65	1680	980	9	24	766	5	10
31..	--	--	--	1080	8	23	--	--	--
Total	473730	--	217204	72810	--	3995	25452	--	734

Day	JULY Mean discharge (cfs)	JULY Suspended sediment Mean concentration (ppm)	JULY Suspended sediment Tons per day	AUGUST Mean discharge (cfs)	AUGUST Suspended sediment Mean concentration (ppm)	AUGUST Suspended sediment Tons per day	SEPTEMBER Mean discharge (cfs)	SEPTEMBER Suspended sediment Mean concentration (ppm)	SEPTEMBER Suspended sediment Tons per day
1..	393	4	4	654	35	B 60	4830	--	12000
2..	380	5	5	785	27	57	2620	--	1700
3..	484	5	7	785	24	51	1210	--	460
4..	785	5	11	960	24	62	650	--	140
5..	940	5	13	471	24	31	406	17	19
6..	880	7	17	636	23	39	370	16	16
7..	1180	9	29	445	22	26	186	15	8
8..	528	10	14	564	22	34	484	14	18
9..	900	13	32	709	24	46	290	13	10
10..	1240	14	47	804	25	54	320	10	9
11..	2010	15	81	709	25	48	240	8	5
12..	2730	15	111	636	24	41	804	6	13
13..	3720	14	141	432	23	27	458	6	7
14..	2620	14	99	432	21	24	583	9	14
15..	2070	14	78	406	20	22	766	10	21
16..	2010	14	76	419	19	21	718	13	25
17..	1310	13	46	564	16	24	862	15	35
18..	1130	12	37	510	15	21	785	16	34
19..	823	13	29	564	14	21	728	18	35
20..	822	13	29	823	11	24	785	19	40
21..	1190	13	42	484	9	12	528	20	29
22..	484	13	17	546	14	21	546	21	31
23..	785	13	28	310	11	9	446	22	26
24..	3730	--	340	523	--	17	914	23	57
25..	15600	99	S 4440	3120	--	340	2010	24	130
26..	20900	179	10100	2440	--	280	2700	24	175
27..	8960	195	4720	1180	--	85	1850	21	105
28..	3640	150	B 1500	1310	--	60	1490	20	80
29..	2300	90	B 550	1060	15	43	636	20	34
30..	1780	65	B 310	1110	15	45	766	19	39
31..	1430	55	B 210	1260	--	460	--	--	--
Total	87754	--	23163	25651	--	2105	29981	--	15315

Total discharge for year (cfs-days).. 2494482
Total load for year (tons).. 1486564

S Computed by subdividing day.
B Computed from estimated-concentration graph.

KENTUCKY RIVER BASIN--Continued

3-2915. EAGLE CREEK AT GLENCOE, KY.

LOCATION.--At gaging station on left bank, 600 feet upstream from bridge on U.S. Highway 127, 0.6 mile south of Glencoe, Gallatin County, 5.8 miles downstream from Tenmile Creek, and 22 miles upstream from mouth.
DRAINAGE AREA.--437 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1949 to September 1965.
Sediment records: November 1961 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 84°F June 29; minimum, 34°F Dec. 8, Jan. 20, 21.
Sediment concentrations: Maximum daily, 3,890 ppm Mar. 29; minimum daily, no flow on many days during October, November, and August.
Sediment loads: Maximum daily, 72,800 tons Sept. 1; minimum daily, 0 tons on many days during October, November, and August.
EXTREMES, 1949-65.--Water temperatures: Maximum, 93°F Sept. 1, 2, 1953; minimum, freezing point on many days during winter months.
Sediment concentrations (1961-65): Maximum daily, 3,890 ppm Mar. 29, 1965; minimum daily, no flow on many days during 1963-65.
Sediment loads (1961-65): Maximum daily, 231,000 tons Mar. 5, 1964; minimum daily, 0 tons on many days during 1963-65.
REMARKS.--Sediment samples are collected at bridge on U.S. Highway 127, 600 feet downstream from gage. Flow affected by ice Jan. 20, 21, 31, Feb. 1-6.

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0700 and 2000)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
0700......	60	62	62	59	59	57	54	53	52	50	48	49	50	52	52	52	55	55	54	50	--	49	48	48	48	48	49	50	--	48	49	52
2000......	64	65	64	62	60	58	56	56	54	51	50	52	55	56	55	57	58	56	55	--	54	52	50	51	50	52	53	--	51	52	53	55
November																																
0700......	50	50	50	50	51	48	48	48	47	48	48	50	50	50	50	--	--	49	--	45	43	35	35	35	35	40	40	--	40	36	--	45
2000......	54	54	53	54	52	50	50	50	51	50	50	54	54	54	52	--	57	--	50	45	45	35	35	35	37	40	--	40	40	--	--	48
December																																
0700......	--	37	40	--	--	46	37	34	37	37	--	--	40	--	37	37	38	35	35	36	36	36	37	38	39	--	40	38	38	40	41	--
2000......	40	40	40	41	40	39	36	39	38	39	39	39	39	38	37	38	36	36	36	36	36	37	38	39	42	41	40	40	42	44	41	39
January																																
0700......	40	42	40	--	38	39	39	41	44	39	--	39	39	38	37	37	37	37	--	34	34	36	36	36	36	37	36	36	36	36	36	38
2000......	42	44	42	41	42	41	43	45	44	39	38	41	40	38	37	37	37	--	36	34	36	36	36	36	37	37	36	36	36	36	36	39
February																																
0700......	36	36	36	36	36	36	37	38	39	40	40	40	40	38	37	38	37	38	38	38	38	37	37	37	--	--	--	--	--	--	--	38
2000......	36	36	36	36	36	36	38	39	40	40	40	40	40	38	--	39	38	39	39	39	38	37	37	37	--	37	--	--	--	--	--	38
March																																
0700......	--	--	44	44	--	43	44	42	39	39	38	38	38	38	38	39	39	42	39	38	38	39	42	--	39	40	--	40	45	42	44	40
2000......	--	45	45	45	44	44	45	41	39	39	38	39	39	38	39	40	42	45	39	38	39	42	44	39	39	40	42	43	44	45	44	42

KENTUCKY RIVER BASIN--Continued

3-2915. EAGLE CREEK AT GLENCOE, KY.--Continued

Temperature (°F) of water, water year October 1964 to September 1965--Continued

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
April																																
0700......	42	41	40	42	43	45	46	48	52	52	57	57	50	50	45	45	43	--	50	53	55	59	60	62	--	63	--	55	52	50	--	50
2000......	45	42	43	46	45	48	--	54	--	57	60	57	52	50	49	48	--	51	57	56	60	63	--	62	65	58	57	58	55	56	--	54
May																																
0700......	53	60	62	67	67	69	71	70	72	73	73	71	70	70	71	72	72	70	70	70	69	72	72	73	74	74	74	72	72	70	70	70
2000......	59	66	70	71	72	75	73	74	75	77	74	74	73	74	74	76	74	74	73	73	75	77	77	78	78	80	78	76	73	74	73	74
June																																
0700......	71	72	72	71	71	72	71	70	70	72	75	76	71	70	--	72	71	70	70	72	73	74	75	75	73	73	73	74	76	76	--	72
2000......	74	75	75	75	74	74	74	72	75	79	79	80	72	72	75	75	75	74	74	76	77	80	80	75	77	80	82	83	84	--	--	76
July																																
0700......	--	75	74	72	72	74	74	75	76	--	--	74	73	76	75	76	75	75	75	75	74	76	77	77	77	76	76	78	77	76	75	75
2000......	72	71	--	75	76	80	80	81	80	80	80	78	82	82	80	80	81	80	80	80	81	82	82	83	80	81	82	83	82	81	80	80
August																																
0700......	75	75	71	71	72	72	73	73	73	71	70	70	71	73	--	76	77	78	78	77	78	78	78	77	76	75	76	75	73	72	73	74
2000......	80	76	75	76	77	78	79	80	76	75	75	76	77	78	--	82	82	83	81	80	82	83	81	80	80	80	80	80	77	78	74	79
September																																
0700......	73	70	--	69	70	69	70	71	72	72	72	69	69	69	70	69	66	--	69	70	71	72	72	72	67	65	66	62	61	62	--	69
2000......	70	71	70	71	70	71	74	74	75	76	71	69	70	--	70	68	--	72	73	74	75	75	75	72	70	70	67	64	64	63	--	71

KENTUCKY RIVER BASIN--Continued

3-2915. EAGLE CREEK AT GLENCOE, KY.--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..				0	0	0	151	9	4
2..				0	0	0	101	12	3
3..				0	0	0	101	13	4
4..				0	0	0	3290	857	S 10600
5..				0	0	0	4490	1200	S 16300
6..				0	0	0	699	388	732
7..				0	0	0	231	275	172
8..				0	0	0	129	172	60
9..				0	0	0	99	102	27
10..				0	0	0	81	58	13
11..				0	0	0	5100	758	S 10400
12..				0	0	0	8440	615	14000
13..				0	0	0	3010	175	S 1420
14..				0	0	0	628	97	164
15..				0	0	0	264	76	54
16..				0	0	0	159	56	24
17..				0	0	0	120	63	20
18..				0	0	0	99	46	12
19..				0	0	0	[illegible]	41	9
20..				0	0	0	73	48	9
21..				0	0	0	65	41	7
22..				0	0	0	62	37	6
23..				0	0	0	60	52	8
24..				0	0	0	140	--	95
25..				5.3	5	T	2330	--	2100
26..				15	9	T	6910	1370	S 26900
27..				13	7	T	2210	579	S 3900
28..				87	11	3	706	134	255
29..				147	8	3	348	115	108
30..				180	11	5	220	124	74
31..				--	--	--	163	91	40
Total	0		0	447.3	--	12	40560	--	87520

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	506	88	S 162	90	25	6	1000	500	B 1400
2..	3860	650	A 6700	80	19	4	1260	440	B 1500
3..	2940	364	S 3160	75	14	3	2950	--	5000
4..	844	247	563	70	15	3	3210	--	9000
5..	394	158	168	67	15	3	3480	370	B 3500
6..	248	36	24	65	17	3	1660	127	569
7..	184	64	32	4120	968	S 15000	1060	68	195
8..	175	67	32	3720	589	S 6570	795	50	107
9..	2010	454	S 3320	2360	362	2310	608	37	61
10..	1900	330	1690	2680	322	2330	465	31	39
11..	781	310	654	2360	320	2040	342	26	24
12..	452	110	134	6300	1200	A 20000	270	23	17
13..	335	57	52	2640	620	4420	226	20	12
14..	293	38	30	660	259	S 512	193	41	21
15..	275	44	33	400	96	104	175	31	15
16..	231	41	26	236	68	43	155	20	8
17..	139	43	16	184	62	31	3300	654	S 10600
18..	135	35	13	167	55	25	3900	1170	12300
19..	117	30	9	143	50	19	914	373	S 1070
20..	105	30	9	123	46	15	432	181	211
21..	109	28	9	111	48	14	299	191	154
22..	151	33	13	105	47	13	236	150	96
23..	211	31	18	97	54	14	206	126	70
24..	275	26	19	185	110	A 55	264	113	81
25..	400	20	22	7030	--	19000	354	--	95
26..	400	16	17	2570	168	1170	2260	340	A 2100
27..	387	16	17	816	340	S 789	1740	199	935
28..	305	20	16	1530	926	3830	753	141	287
29..	167	25	11	--	--	--	6640	3990	S 52200
30..	129	29	10	--	--	--	1520	427	S 1910
31..	100	28	8	--	--	--	816	134	295
Total	18558	--	16987	38984	--	78326	41483	--	103872

S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

KENTUCKY RIVER BASIN--Continued

3-2915. EAGLE CREEK AT GLENCOE, KY.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	472	90	115	220	69	41	26	23	2
2..	368	90	89	184	68	34	29	26	2
3..	264	96	68	155	55	23	33	37	3
4..	211	75	43	129	41	14	29	46	4
5..	184	53	26	108	26	8	23	26	2
6..	206	56	31	105	21	6	20	12	1
7..	311	62	52	99	31	8	19	35	2
8..	317	53	45	93	37	9	15	39	2
9..	1400	712	S 4000	87	33	8	11	34	1
10..	1300	269	S 1090	83	29	6	9.0	31	1
11..	6970	3160	S 72600	79	34	7	7.8	43	1
12..	2730	1870	S 15400	83	43	10	6.1	44	1
13..	781	643	S 1500	120	43	14	5.8	66	1
14..	452	200	244	95	35	9	6.4	65	1
15..	673	--	250	73	37	7	8.2	79	2
16..	1280	108	373	59	43	7	8.6	70	2
17..	809	89	194	50	43	6	7.8	52	1
18..	524	89	126	46	63	8	6.1	45	1
19..	3100	751	6290	64	42	7	4.6	49	1
20..	1700	263	1210	69	21	4	3.6	44	T
21..	686	146	270	85	25	6	2.8	38	T
22..	446	98	118	73	34	7	2.2	29	T
23..	406	61	67	59	35	6	2.2	28	T
24..	680	--	600	59	33	5	2.0	35	T
25..	1280	209	S 1050	213	--	45	1.6	30	T
26..	3000	432	3500	202	32	17	1.2	30	T
27..	1240	405	1360	123	40	13	.9	29	T
28..	556	218	327	85	48	11	.8	17	T
29..	368	76	76	59	47	8	.6	19	T
30..	275	52	39	41	43	5	1.0	25	T
31..	--	--	--	32	30	3	--	--	--
Total	32989	--	111153	3032	--	362	294.3	--	33

Day	JULY			AUGUST			SEPTEMBER		
1..	1.3	22	T	0.6	19	T	9700	2490	S 72800
2..	1.8	25	T	.6	19	T	9770	827	S 28800
3..	217	--	210	.6	19	T	900	209	S 3900
4..	46	201	25	.4	19	T	342	89	82
5..	14	149	6	.4	17	T	171	63	29
6..	7.4	106	2	.3	16	T	95	48	12
7..	5.8	74	1	.4	14	T	65	43	8
8..	3.8	49	1	.7	14	T	50	41	6
9..	3.4	31	T	.7	13	T	36	54	5
10..	122	750	A 250	.6	12	T	30	43	3
11..	101	429	117	.4	11	T	28	28	2
12..	47	301	38	.3	10	T	7940	1030	S 26900
13..	25	109	7	.2	5	T	3200	257	S 2710
14..	17	--	3	.1	10	T	760	82	168
15..	13	--	1	.1	16	T	504	65	S 99
16..	9.4	--	1	0	0	0	3180	530	S 9450
17..	8.2	--	1	0	0	0	2600	635	S 6100
18..	8.2	--	1	0	0	0	432	289	337
19..	6.7	--	1	.5	18	T	281	176	134
20..	5.8	27	T	.5	24	T	135	94	34
21..	4.3	26	T	.4	25	T	99	47	13
22..	3.4	24	T	.2	17	T	65	41	7
23..	3.0	24	T	0	0	0	53	35	5
24..	2.4	24	T	0	0	0	44	30	4
25..	1.9	24	T	0	0	0	36	30	3
26..	1.8	22	T	0	0	0	33	30	3
27..	1.3	20	T	0	0	0	30	26	2
28..	1.0	19	T	0	0	0	28	23	2
29..	.8	18	T	0	0	0	24	20	1
30..	.8	19	T	0	0	0	23	23	1
31..	.6	19	T	241	422	S 1300	--	--	--
Total	685.1	--	667	249.0	--	1300	40654	--	151620

Total discharge for year (cfs-days).. 217935.7
Total load for year (tons).. 551852

S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.

KENTUCKY RIVER BASIN--Continued

3-2915. EAGLE CREEK AT GLENCOE, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Dec. 11, 1964	0800			2120	814		56	66	78	88	95	98	100					SBWC
Mar. 29, 1965	1600			5050	1750		50	63	73	86	98	100	--					SBWC
Mar. 29	1600			5050	1750		34	45	59	73	93	94	99	100				SBN
July 10	2200			293	614		91	93	94	96	99	99	100					SBWC
Sept. 1	0800			7210	2590		60	71	84	94	98	100	--					SBWC

SALT RIVER BASIN

3-3015. ROLLING FORK NEAR BOSTON, KY.

LOCATION.--At gaging station at bridge on U.S. Highway 62 and State Highway 61, 0.4 mile downstream from Beech Fork, and 2.3 miles southwest of Boston, Nelson County.
DRAINAGE AREA.--1,299 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1952.
Water temperatures: October 1949 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 85°F July 24, 27; minimum, freezing point on several days during January and February.
EXTREMES, 1949-65.--Water temperatures: Maximum, 87°F July 4, 1950, June 22, 25, 26, 1954; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0630 and 1730)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
0630......	60	62	60	62	58	50	52	53	54	51	58	49	50	52	50	51	62	60	50	50	50	49	48	42	42	47	43	43	47	52	50	52
1730......	61	67	61	64	63	60	--	60	59	52	--	51	53	54	62	62	67	63	55	59	52	51	50	48	49	49	51	53	51	55	52	56
November																																
0630......	51	51	52	52	52	--	--	50	48	--	50	53	54	--	54	55	56	51	55	46	--	39	--	39	43	43	43	45	43	--	--	--
1730......	53	55	54	53	55	--	50	52	--	52	53	52	60	53	54	55	59	57	54	41	41	42	44	--	45	45	45	46	44	38	--	50
December																																
0630......	37	38	41	42	43	42	43	42	41	40	42	43	48	42	43	40	41	--	39	35	37	35	38	42	45	44	44	45	45	46	49	42
1730......	37	40	43	45	46	44	45	42	42	40	45	45	47	46	42	41	40	39	35	38	35	36	40	46	46	43	43	45	45	43	46	42
January																																
0630......	46	46	46	45	45	42	42	45	46	42	44	42	40	40	40	39	32	32	32	33	32	34	35	33	37	40	34	35	--	37	35	39
1730......	48	48	47	45	45	42	46	46	45	42	45	41	41	40	42	38	32	32	33	33	34	37	37	35	42	36	37	40	--	38	37	40
February																																
0630......	33	32	32	32	32	34	35	38	42	48	44	45	44	41	42	41	42	--	--	--	43	37	38	40	--	36	40	38	--	--	--	39
1730......	34	32	33	34	34	35	38	40	44	48	46	48	46	42	43	43	--	--	--	43	42	39	40	43	--	36	38	41	--	--	--	40
March																																
0630......	42	45	46	42	40	43	36	38	--	40	40	41	42	43	40	41	46	47	45	40	42	40	44	45	43	41	--	43	44	45	45	42
1730......	45	47	44	44	42	45	38	40	38	42	41	42	44	43	43	45	48	47	42	38	42	43	45	45	43	42	42	44	47	50	50	44
April																																
0630......	45	47	47	49	50	50	54	55	--	59	59	60	60	61	59	58	58	59	58	59	58	60	64	65	67	65	63	58	56	56	--	57
1730......	49	50	49	50	50	55	59	60	59	59	60	63	63	61	60	60	60	62	60	61	61	64	67	67	67	65	63	58	56	58	--	59
May																																
0630......	59	61	64	67	65	69	70	70	71	72	73	72	72	71	72	72	71	70	70	68	69	70	71	70	72	70	68	68	68	70	71	69
1730......	60	63	66	69	70	70	72	73	75	74	75	72	74	73	73	73	73	72	71	71	72	73	73	71	73	71	70	70	70	72	72	71
June																																
0630......	70	69	71	73	72	72	73	71	70	72	72	73	73	74	73	70	73	72	70	72	73	74	75	74	74	70	74	77	80	74	--	73
1730......	72	72	72	75	74	73	74	73	71	73	73	74	75	72	73	73	75	74	73	75	75	76	78	76	77	74	81	82	81	79	--	75
July																																
0630......	74	74	75	74	73	75	74	74	76	72	74	74	75	74	75	75	75	71	74	73	72	74	74	73	78	79	78	77	76	74	76	75
1730......	79	80	77	82	80	80	82	80	79	77	79	80	82	81	81	81	81	81	81	81	81	83	84	85	84	83	85	83	82	83	81	81
August																																
0630......	75	74	73	73	75	74	72	72	74	73	72	73	74	73	74	75	73	75	73	74	73	74	75	74	74	73	74	75	74	72	72	74
1730......	80	79	79	80	80	81	79	79	79	79	78	80	81	79	80	81	79	79	80	79	80	80	81	79	81	79	79	81	80	80	79	80
September																																
0630......	--	72	73	74	74	70	72	71	70	73	71	72	73	74	74	73	72	73	71	71	71	72	70	69	69	68	69	71	70	70	--	71
1730......	78	79	76	78	79	78	76	75	76	78	76	78	78	79	80	76	78	79	75	76	75	77	75	75	75	74	73	74	73	73	--	76

GREEN RIVER BASIN

3-3060. GREEN RIVER NEAR CAMPBELLSVILLE, KY.

LOCATION.--Temperature recorder at gaging station on right bank at bridge on State Highway 55, 0.6 mile downstream from Green River Dam (under construction), 0.7 mile upstream from Pinch Creek, and 6.9 miles south of Campbellsville, Taylor County.
DRAINAGE AREA.--682 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 82°F July 24, 25; minimum, freezing point on several days during February.
EXTREMES, 1963-65.--Water temperatures: Maximum, 88°F Aug. 3-5, 1964; minimum, freezing point on several days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	67	68	68	68	66	61	58	56	58	57	54	53	55	56	56	56	56	56	56	55	52	52	52	51	50	50	52	52	53	53	53	56
Minimum	64	67	67	66	61	56	54	54	56	53	50	49	51	53	55	55	53	54	55	50	49	50	49	48	48	48	49	51	51	52	50	54
November																																
Maximum	54	55	55	55	56	56	54	53	53	53	53	54	55	55	54	56	57	57	57	53	49	46	42	40	42	42	44	46	46	45	--	51
Minimum	51	53	52	53	53	52	50	52	52	50	50	52	54	50	51	54	55	57	53	49	46	42	40	40	40	42	42	44	45	42	--	49
December																																
Maximum	42	39	42	47	47	47	45	42	41	41	46	46	46	46	44	41	40	40	39	37	37	39	42	48	48	48	48	47	45	45	46	44
Minimum	39	39	39	42	47	45	42	40	40	41	41	46	46	44	41	40	40	39	37	36	36	37	39	42	48	48	47	45	44	44	46	42
January																																
Maximum	46	47	47	47	43	42	43	45	47	46	44	42	41	41	40	38	37	35	34	33	34	36	40	42	42	43	43	41	39	38	35	41
Minimum	45	46	47	43	42	42	42	43	45	44	42	41	41	40	38	37	35	34	33	33	33	34	36	40	42	42	41	39	38	35	33	40
February																																
Maximum	33	32	32	32	32	32	36	39	43	48	48	48	48	44	41	39	40	41	42	41	41	40	38	38	39	38	37	40	--	--	--	39
Minimum	32	32	32	32	32	32	32	36	39	43	48	48	44	41	39	39	39	40	41	41	40	38	37	38	38	36	36	37	--	--	--	38
March																																
Maximum	44	45	45	45	44	41	40	40	40	41	41	41	42	42	43	44	47	47	46	44	42	43	45	45	44	43	43	45	48	48	48	44
Minimum	40	44	45	44	41	40	40	40	40	40	40	41	41	42	41	42	44	46	44	42	41	41	43	44	43	43	43	43	45	48	47	43
April																																
Maximum	48	50	50	49	50	54	54	54	54	55	57	61	61	61	59	59	57	59	59	59	61	63	67	69	69	68	65	62	58	60	--	58
Minimum	47	48	49	48	48	50	53	54	54	54	55	57	60	59	59	57	55	57	59	57	58	60	63	66	68	65	62	58	57	57	--	56
May																																
Maximum	64	67	69	69	71	72	73	73	73	72	72	71	72	73	73	73	73	73	73	73	75	76	76	76	75	77	77	76	73	71	73	73
Minimum	60	63	66	67	68	70	71	71	72	72	71	69	68	70	71	72	72	73	72	73	73	74	75	73	74	75	76	73	70	69	70	71
June																																
Maximum	74	74	74	75	75	75	75	74	75	76	76	76	76	76	75	73	69	69	70	71	72	74	74	74	74	74	75	76	76	75	--	74
Minimum	72	73	74	74	74	75	74	74	74	75	76	75	75	74	73	69	68	68	69	70	71	72	74	74	74	73	74	76	76	75	--	73
July																																
Maximum	76	76	76	76	76	75	75	75	75	75	75	74	76	76	76	76	76	76	76	77	78	79	80	82	82	81	80	81	81	80	77	77
Minimum	75	75	76	75	74	74	75	75	75	75	74	74	74	76	76	76	75	75	75	76	77	77	78	79	81	80	80	80	80	77	76	76
August																																
Maximum	77	77	76	76	77	78	78	78	78	78	77	77	78	79	80	81	81	81	81	80	80	80	80	79	79	79	78	78	78	75	74	78
Minimum	76	76	76	76	76	77	78	78	77	77	76	76	77	78	79	80	80	80	80	79	79	79	79	78	79	78	78	78	75	73	73	77
September																																
Maximum	74	74	73	74	74	74	75	76	77	77	77	76	76	74	73	73	74	75	75	75	75	75	74	74	71	66	64	64	65	65	--	73
Minimum	74	73	73	73	74	74	74	75	76	77	76	76	74	73	73	73	73	74	74	74	74	74	74	71	66	64	64	63	64	65	--	72

GREEN RIVER BASIN--Continued

3-3064.9. GREEN RIVER NEAR GREENSBURG, KY.

LOCATION.--At auxiliary gaging station at Sardins Ford bridge on State Highway 487, 1.4 miles east of Greensburg, Green County, and 2 miles upstream from gaging station.
DRAINAGE AREA.--736 square miles at gage.
RECORDS AVAILABLE.--Chemical analyses: October 1959 to September 1965.
REMARKS.--Records of discharge are given for Green River at Greensburg.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$ Calcium, magnesium	Hardness as $CaCO_3$ Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color	Turbidity
Oct. 20, 1964....	22	6.2	0.11					74	19	7.0			109	90	30	207	7.7	10	11
Nov. 17..........	26	4.3	.05					101	23	8.0			123	104	21	237	7.4	5	11
Dec. 15..........	1800	7.8	.06					52	17	4.0			78	63	20	145	7.4	15	30
Jan. 20, 1965....	865	5.8	.07					56	16	5.0			72	62	16	142	7.4	5	6
Feb. 16..........	1670	8.6	.14					53	13	4.0			103	58	14	137	7.3	5	25
Mar. 16..........	765	9.3	.23					58	16	4.0			108	63	16	143	7.4	4	2
Apr. 13..........	1130	6.4	.22					56	14	3.0			85	62	16	137	7.3	5	15
May 18...........	161	4.3	.38					78	15	4.0			112	78	14	168	7.4	3	3
June 15..........	190	9.8	.34					74	13	4.0			108	71	10	158	7.6	10	65
July 13..........	733	9.9	.57					75	14	3.0			120	75	14	166	7.6	25	30
Aug. 10..........	42	5.5	.24					96	14	6.0			122	94	16	203	7.5	8	30
Sept. 21.........	47	8.0	.24					84	16	5.0			111	84	15	186	7.3	7	50

GREEN RIVER BASIN--Continued

3-3078. LITTLE BARREN RIVER NEAR MONROE, KY.

LOCATION.--At bridge on State Highway 88, 1.2 miles east of Monroe, Hart County, and 6.3 miles upstream from mouth.
DRAINAGE AREA.--256 square miles (at mouth).
RECORDS AVAILABLE.--Chemical analyses: December 1960 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Oct. 20, 1964										170			516			953		
Nov. 17										275			730			1360		
Dec. 15										34			206			400		
Jan. 21, 1965										46			237			440		
Feb. 16										20			198			340		
Mar. 16										90			312			590		
Apr. 13										36			233			398		
May 19										30			214			383		
June 15										235			592			1050		
July 13										24			187			344		
Aug. 10										200			546			981		
Sept. 21										280			716			1280		

GREEN RIVER BASIN--Continued

3-3085. GREEN RIVER AT MUNFORDVILLE, KY.

LOCATION.--At gaging station at bridge on U.S. Highway 31W at Munfordville, Hart County.
DRAINAGE AREA.--1,673 square miles, of which about 180 square miles does not contribute directly to surface runoff.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1965.
Water temperatures: October 1950 to September 1965.
Sediment records: April 1951 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 1,380 micromhos Sept. 3; minimum daily, 120 micromhos Mar. 28.
Water temperatures: Maximum, 78°F July 24; minimum, freezing point on several days during December to February.
Sediment concentrations: Maximum daily, 1,400 ppm June 3; minimum daily, 2 ppm Feb. 5, 6, May 14, 16.
Sediment loads: Maximum daily, 29,500 tons July 11; minimum daily, 1 ton on several days during October and November.
EXTREMES, 1950-65.--Specific conductance: Maximum daily, 9,420 micromhos Oct. 10, 1959; minimum daily, 59 micromhos Mar. 25, 1952.
Water temperatures: Maximum, 82°F July 20, 1957; minimum, freesing point on many days during winter months from 1957 to 1965.
Sediment concentrations (1951-65): Maximum daily, 3,180 ppm June 14, 1952; minimum daily, 1 ppm on many days during 1952-57, 1960-64.
Sediment loads (1951-65): Maximum daily, 157,000 tons Mar. 1, 1962; minimum daily, less than 0.50 ton on many days during 1953-56, 1961-64.
REMARKS.--Values reported for iron are in solution when analyzed. Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) maximum daily turbidity for each month, and (4) composite of all daily samples for each month. Flow affected by ice Jan. 29-31, Feb. 1-6.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color	Turbidity
Oct. 1, 1964.......	770	--	--	--	--			--	--	146			--	--	--	702	--	--	--
Oct. 4............	402	--	--	--	--			--	--	64			--	--	--	473	--	--	--
Oct. 1-31.........	221	8.6	0.00	56	11			151	21	92			302	185	61	584	8.0	5	--
Nov. 13............	112	6.3	.00	77	15			180	31	210			520	254	106	1020	8.1	5	--
Nov. 21............	--	--	--	--	--			--	--	--			--	--	--	--	--	--	390
Nov. 23............	1370	6.9	.01	30	8.3			80	28	30			142	109	44	274	7.8	10	--
Nov. 1-30..........	727	--	--	--	--			--	24	131			380	--	--	706	--	--	--
Dec. 3.............	760	7.8	.04	--	--			124	28	62			234	148	46	448	7.7	2	--
Dec. 5.............	--	--	--	--	--			--	--	--			--	--	--	--	--	--	1200
Dec. 14............	13700	6.6	.12	--	--			66	15	11			100	72	18	176	7.1	22	--
Dec. 1-31..........	5709	--	--	--	--			--	--	34			175	--	--	316	--	--	--
Jan. 10, 1965......	--	--	--	--	--			--	--	--			--	--	--	--	--	--	600
Jan. 12............	17300	8.3	.04	--	--			61	13	6.0			104	72	22	153	7.6	15	--
Jan. 31............	1500	9.6	.01	--	--			116	23	35			226	140	45	353	7.7	5	--
Jan. 1-31..........	5004	--	--	--	--			--	--	24			158	--	--	284	--	--	--
Feb. 8.............	5530	10	.01	--	--			118	19	54			240	133	42	403	8.0	5	--
Feb. 13............	--	--	--	--	--			--	--	--			--	--	--	--	--	--	500
Feb. 14............	15000	7.6	.03	--	--			68	11	7.0			80	73	18	167	7.5	--	--
Feb. 1-28..........	4851	--	--	--	--			--	--	28			164	--	--	298	--	--	--

Mar. 17, 1965......	2070	7.6	.07	--	--			108	17	36			178	124	36	337	8.0	0	--
Mar. 26............	--	--	--	--	--			--	--	--			--	--	--	--	--	--	1000
Mar. 28............	20900	8.1	.25	--	--			48	10	6.0			64	50	10	120	7.3	--	--
Mar. 1-30..........	7617	--	--	--	--			--	--	21			135	--	--	241	--	--	--
Apr. 1.............	23100	13	.12	--	--			57	12	6.0			61	67	20	140	8.0	12	--
Apr. 17............	--	--	--	--	--			--	--	--			--	--	--	--	--	--	40
Apr. 20............	4030	10	.12	--	--			108	25	41			215	124	36	332	8.3	12	--
Apr. 1-30..........	4801	--	--	--	--			--	--	20			161	--	--	256	8.1	12	--
May 1..............	2050	7.9	.02	--	--			106	15	30			144	114	27	297	7.9	5	--
May 20.............	--	--	--	--	--			--	--	--			--	--	--	--	--	--	75
May 21.............	730	7.4	.03	--	--			128	26	168			324	180	75	797	8.0	5	--
May 1-31...........	904	--	--	--	--			--	--	61			224	--	--	428	--	--	--
June 4.............	--	--	--	--	--			--	--	--			--	--	--	--	--	--	1700
June 18............	2880	8.5	.10	--	--			84	13	16			122	86	17	219	7.6	6	--
June 28............	362	7.7	.00	--	--			138	21	92			294	164	51	552	7.9	4	--
June 1-8, 10-30....	1072	--	--	--	--			--	--	54			211	--	--	393	--	--	--
July 10............	--	--	--	--	--			--	--	--			--	--	--	--	--	--	450
July 11............	12700	--	--	--	--			54	9.2	12			--	--	--	144	7.6	50	--
July 31............	306	12	.02	--	--			160	25	124			381	192	61	692	7.7	5	--
July 1-31..........	1512	--	--	--	--			--	--	54			219	--	--	409	--	--	--
Aug. 4.............	226	8.1	.02	--	--			164	18	84			310	178	44	562	8.1	5	--
Aug. 7.............	--	--	--	--	--			--	--	--			--	--	--	--	--	--	10
Aug. 18............	157	8.8	.02	--	--			168	21	212			542	228	90	978	8.0	3	--
Aug. 1-31..........	187	--	--	--	--			--	--	130			387	--	--	716	--	--	--
Sept. 3............	346	6.5	.01	--	--			140	30	350			768	268	153	1380	8.1	5	--
Sept. 17...........	--	--	--	--	--			--	--	--			--	--	--	--	--	--	165
Sept. 20...........	258	7.1	.06	--	--			122	15	50			236	133	33	397	8.1	10	--
Sept. 1-30.........	340	--	--	--	--			--	--	134			--	387	--	708	--	--	--

GREEN RIVER BASIN--Continued

3-3085. GREEN RIVER AT MUNFORDVILLE, KY.--Continued

Specific conductance (micromhos at 25°C) and chloride, in parts per million, water year October 1964 to September 1965

Day	October		November		December		January	
	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)
1	702	146	672	112	432	58	303	27
2	485	66	680	114	442	62	314	31
3	515	78	680	114	448	62	298	28
4	473	64	690	117	405	48	216	12
5	497	74	706	122	235	17	208	13
6	558	91	741	132	180	13	250	19
7	552	90	798	150	202	15	278	22
8	644	120	866	172	282	28	298	26
9	574	94	902	180	319	32	311	30
10	534	82	902	180	350	38	234	15
11	515	78	934	185	360	42	181	7.0
12	532	80	997	205	388	53	153	6.0
13	533	81	1020	210	208	12	176	8 0
14	520	76	1010	208	176	11	238	18
15	514	74	973	195	215	17	251	18
16	529	78	941	185	278	26	268	22
17	543	84	939	188	308	31	289	28
18	558	85	941	188	334	36	284	26
19	566	90	900	175	363	42	303	30
20	581	94	866	172	334	36	311	28
21	591	95	665	124	343	40	325	33
22	603	98	308	30	363	44	343	36
23	625	102	274	29	356	42	337	35
24	642	106	328	38	353	42	328	32
25	654	110	356	44	350	42	296	37
26	666	112	426	58	222	16	280	23
27	667	114	494	74	182	11	296	27
28	650	106	368	40	182	12	284	25
29	662	112	334	36	210	15	301	28
30	673	112	390	50	257	22	316	32
31	671	113	--	--	282	28	353	35

Day	February		March		April		May	
1	346	36	239	21	140	6.0	297	28
2	375	46	251	20	203	11	317	32
3	382	43	270	26	234	15	338	38
4	396	49	270	24	244	18	351	44
5	395	46	274	26	260	20	365	40
6	370	44	192	13	266	20	379	48
7	396	49	195	14	260	20	391	50
8	409	54	215	14	225	12	401	50
9	248	16	238	18	195	10	417	54
10	234	16	249	18	217	14	418	54
11	284	26	258	22	238	16	431	58
12	222	11	272	24	258	20	442	60
13	184	7.0	287	26	274	22	480	72
14	167	7.0	296	28	278	24	476	70
15	210	12	306	30	292	26	472	66
16	235	15	325	36	312	30	471	66
17	257	19	337	36	232	15	471	68
18	274	23	316	36	217	15	487	72
19	291	25	188	11	250	20	472	66
20	303	28	185	12	332	41	434	58
21	311	30	--	--	258	18	797	172
22	328	34	258	24	258	22	425	50
23	346	38	278	24	278	25	398	48
24	346	38	294	28	294	27	425	56
25	334	35	306	30	307	30	407	50
26	246	16	253	20	309	30	447	61
27	173	10	147	7.0	315	30	309	30
28	215	14	120	6.0	240	18	341	42
29	--	--	129	7.0	257	22	421	62
30	--	--	165	10	281	26	438	64
31	--	--	134	6.0	--	--	406	56

GREEN RIVER BASIN--Continued

3-3085. *GREEN RIVER AT MUNFORDVILLE, KY.*--Continued

Specific conductance (micromhos at 25°C) and chloride, in parts per million, water year October 1964 to September 1965--Continued

Day	June		July		August		September	
	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)	Specific conductance (micromhos at 25°C)	Chloride (Cl)
1	396	49	502	92	722	134	687	129
2	405	51	287	30	626	104	931	206
3	380	50	303	30	623	102	1380	350
4	294	32	340	40	562	84	1290	315
5	350	40	513	86	562	84	1260	310
6	401	51	325	34	566	86	1110	255
7	457	64	280	28	566	86	834	165
8	423	64	289	34	588	94	662	114
9	--	--	319	42	618	104	610	98
10	298	26	418	66	673	119	583	88
11	298	31	144	12	691	125	580	86
12	337	38	241	20	704	126	552	78
13	385	50	306	24	744	143	599	90
14	432	60	308	25	755	146	619	96
15	499	76	337	31	807	158	620	102
16	457	64	368	38	805	158	679	126
17	256	16	394	44	839	170	1200	292
18	219	16	398	44	978	212	598	116
19	226	18	402	44	778	148	519	90
20	260	24	453	58	774	150	397	50
21	298	32	458	58	726	132	445	62
22	334	37	499	70	714	126	504	75
23	360	42	508	73	710	124	508	76
24	381	46	512	73	693	124	538	83
25	402	54	530	80	726	129	931	204
26	430	60	529	78	747	134	931	204
27	507	78	460	66	746	136	628	110
28	552	92	474	70	737	138	473	68
29	499	76	566	92	829	164	432	67
30	485	74	691	124	831	166	434	66
31	--	--	692	124	811	162	--	--

GREEN RIVER BASIN--Continued

3-3085. GREEN RIVER AT MUNFORDVILLE, KY.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at 0700)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	61	63	61	62	60	50	54	55	55	52	51	52	52	53	56	56	56	56	56	51	51	50	50	49	50	49	50	53	49	52	51	54
November	50	50	50	50	50	48	48	48	48	48	48	48	50	48	49	49	49	49	48	47	46	--	--	--	--	--	46	49	44	41	--	48
December	34	41	44	51	48	44	42	42	39	42	45	50	51	44	42	43	45	47	32	37	36	38	43	48	47	50	48	46	44	49	47	44
January	50	52	47	44	44	45	46	50	48	45	42	41	42	41	39	37	32	32	32	36	34	38	44	46	45	49	--	42	38	33	32	42
February	32	32	32	32	32	37	40	48	46	50	52	51	47	43	42	42	42	--	42	39	46	38	38	42	37	35	33	41	--	--	--	40
March	45	48	47	46	40	41	41	42	42	43	41	43	43	43	42	49	49	47	44	39	--	43	42	45	44	43	42	45	49	49	49	44
April	47	49	49	51	52	56	59	57	59	56	61	62	60	58	58	57	57	60	58	57	58	60	63	--	69	65	62	59	58	58	--	58
May	62	64	64	64	66	67	70	69	70	70	67	68	67	67	69	68	69	70	68	67	68	70	71	71	71	72	71	69	66	67	68	68
June	68	70	69	68	71	71	70	70	--	70	73	73	74	71	70	68	67	68	69	70	70	72	74	74	73	74	74	73	75	74	--	71
July	74	71	72	74	75	73	75	74	75	72	71	70	71	74	74	74	73	74	74	74	74	74	75	78	77	77	77	76	76	74	74	74
August	74	74	70	71	72	73	73	73	72	73	72	71	73	74	75	76	74	75	74	73	72	73	74	72	72	73	74	72	68	66	71	73
September	69	70	72	72	72	72	70	70	71	70	72	71	69	68	69	70	71	72	73	71	74	73	71	68	65	62	61	61	62	66	--	69

GREEN RIVER BASIN--Continued

3-3085. GREEN RIVER AT MUNFORDVILLE, KY.--Continued

Suspended sediment, water year October 1964 to September 1965

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	770	98	204	115	12	4	962	26	68
2..	631	37	63	118	14	4	785	20	42
3..	482	27	35	115	12	4	760	20	41
4..	402	21	23	110	10	3	6790	750	S 16000
5..	406	16	18	108	6	2	12800	568	19600
6..	342	14	13	112	9	3	11900	293	9410
7..	310	10	8	110	9	3	7600	140	2870
8..	274	9	7	110	8	2	3300	75	668
9..	258	9	6	110	10	3	2400	43	279
10..	226	11	7	110	8	2	1900	29	149
11..	189	7	4	110	10	3	2590	127	S 1100
12..	169	6	3	112	9	3	10700	300	8670
13..	160	3	1	112	11	3	14700	228	9050
14..	157	4	2	112	9	3	13700	119	4400
15..	148	3	1	115	7	2	8110	63	1380
16..	145	5	2	118	6	2	3900	42	442
17..	142	6	2	118	3	1	2890	13	101
18..	138	4	1	120	5	2	2400	17	110
19..	130	7	2	169	14	6	2180	18	106
20..	122	6	2	2020	310	A 1700	2110	11	63
21..	120	6	2	2530	249	1700	1960	12	64
22..	118	5	2	2440	206	1360	1940	10	52
23..	118	5	2	1370	106	392	1870	9	45
24..	115	5	2	825	60	134	1800	10	49
25..	110	5	1	740	47	94	7220	222	S 5980
26..	110	4	1	2350	130	825	11700	360	11400
27..	110	8	2	2360	102	650	12600	338	11500
28..	112	13	4	2130	81	466	11000	168	4990
29..	115	9	3	1600	56	242	6920	83	1550
30..	115	8	2	1250	51	172	4240	54	618
31..	112	9	3	--	--	--	3260	48	422
Total	6856	--	428	21819	--	7790	176987	--	111219
	JANUARY			FEBRUARY			MARCH		
1..	2690	46	334	1300	3	11	4390	36	427
2..	3540	92	S 1000	1100	3	9	3900	32	337
3..	7490	231	4670	1000	3	8	3640	32	314
4..	8200	121	2680	900	4	10	4210	29	330
5..	6310	57	971	900	2	5	6980	62	1170
6..	4210	30	341	1100	2	6	9100	69	1700
7..	3290	21	187	2250	54	S 434	7980	57	1230
8..	2760	31	231	5530	153	2280	5990	50	809
9..	3590	126	S 1590	5970	70	1130	4980	25	336
10..	11700	338	10700	5500	66	980	4280	23	266
11..	16200	222	9710	7450	163	3280	3650	19	187
12..	17300	149	6960	13000	166	S 6200	3000	23	186
13..	14600	63	2480	16800	240	10900	2660	20	144
14..	7210	50	973	15000	118	4780	2370	22	141
15..	4660	30	377	8840	55	1310	2170	15	88
16..	3960	18	188	4840	46	601	1990	11	59
17..	3380	14	128	3700	43	430	2070	21	S 135
18..	2920	11	87	3060	31	256	6500	746	13100
19..	2600	9	63	2640	25	178	7640	357	7360
20..	2280	7	43	2310	24	150	5910	124	1980
21..	2160	7	41	2050	24	133	3850	41	426
22..	2270	6	37	1860	20	100	3090	25	209
23..	2570	7	49	1670	16	72	2670	16	115
24..	2900	14	110	1600	13	56	2410	12	78
25..	3020	16	130	4800	154	S 2380	3220	208	S 2340
26..	2920	15	118	7820	256	5410	12800	794	27400
27..	2740	19	141	7560	102	2080	19400	450	23600
28..	2460	13	86	5290	50	714	20900	330	18600
29..	2100	8	45	--	--	--	21300	279	16000
30..	1700	5	23	--	--	--	24000	442	28600
31..	1500	5	20	--	--	--	25300	247	16900
Total	155130	--	44513	135840	--	43903	232350	--	164567

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.

GREEN RIVER BASIN--Continued

3-3085. GREEN RIVER AT MUNFORDVILLE, KY.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	23100	128	7980	2050	13	72	505	31	42
2..	13100	52	1840	1750	12	57	528	49	S 81
3..	5500	75	1110	1530	14	58	2540	1400	A 9600
4..	4220	51	581	1340	5	18	1530	992	S 4490
5..	3690	45	448	1180	6	19	854	241	556
6..	3710	118	1180	1060	3	9	780	120	253
7..	5740	232	3600	956	3	8	1620	600	A 2600
8..	7280	195	3830	872	5	12	1610	556	2420
9..	7160	94	1820	795	3	6	1720	245	1140
10..	5110	62	855	755	4	8	1310	169	598
11..	3950	36	384	745	4	8	926	132	330
12..	3340	27	243	716	4	8	730	80	158
13..	2850	20	154	694	3	6	654	65	115
14..	2450	19	126	667	2	4	644	65	113
15..	2280	26	160	640	3	5	595	49	79
16..	4360	171	S 2180	590	2	3	1520	--	E 800
17..	5370	232	3360	559	3	5	4080	691	7610
18..	4190	106	1200	564	5	A 8	2880	223	1730
19..	3360	46	417	1110	180	A 550	1590	108	464
20..	4030	57	620	1060	163	467	1060	75	215
21..	3830	46	476	730	77	152	805	51	111
22..	3170	30	257	636	42	72	662	44	79
23..	2640	22	157	604	43	70	572	30	46
24..	2290	17	105	820	130	A 290	514	19	26
25..	2070	16	89	848	147	337	500	15	20
26..	2740	66	S 519	1060	117	335	451	14	17
27..	3900	108	1140	842	74	168	392	13	14
28..	3590	72	698	860	81	188	362	13	13
29..	2720	34	250	780	69	145	334	13	12
30..	2300	21	130	640	45	78	532	61	S 155
31..	--	--	--	568	38	58	--	--	--
Total	144040	--	35909	28021	--	3224	32800	--	33887
	JULY			AUGUST			SEPTEMBER		
1..	1970	224	1190	278	25	19	314	55	A 45
2..	1020	208	573	266	25	18	586	46	73
3..	685	115	213	242	25	16	346	20	19
4..	622	108	181	226	25	15	314	13	11
5..	1570	182	771	218	25	15	230	12	7
6..	1750	220	1040	203	25	14	189	13	7
7..	1270	153	525	206	25	14	169	10	5
8..	974	146	384	206	25	14	160	9	4
9..	842	138	314	214	26	15	157	11	5
10..	3620	--	E 12000	258	35	24	148	16	6
11..	12700	860	29500	222	26	16	151	17	7
12..	5460	196	2890	203	31	17	178	17	8
13..	2510	111	752	200	27	15	189	20	10
14..	1740	99	465	189	25	13	172	21	10
15..	1320	86	307	175	29	14	186	20	10
16..	1050	65	184	169	29	13	878	--	E 450
17..	848	43	98	166	29	13	825	122	272
18..	716	32	62	157	27	11	456	65	80
19..	626	27	46	151	23	9	318	45	39
20..	564	26	40	145	23	9	258	32	22
21..	496	24	32	142	20	8	226	27	16
22..	469	25	32	142	21	8	206	32	18
23..	433	25	29	140	21	8	196	23	12
24..	402	25	27	140	24	9	206	15	8
25..	374	25	25	135	21	8	604	86	140
26..	685	121	S 241	132	22	8	740	73	146
27..	568	78	120	138	21	8	582	31	49
28..	500	38	51	230	35	22	446	17	20
29..	424	28	32	203	18	10	397	14	15
30..	350	27	26	151	18	7	370	12	12
31..	306	26	21	142	13	5	--	--	--
Total	46864	--	52171	5789	--	395	10197	--	1526

Total discharge for year (cfs-days).. 996893
Total load for year (tons).. 499532

E Estimated.

S Computed by subdividing day.

A Computed from partly estimated-concentration graph.

GREEN RIVER BASIN--Continued

3-3090. GREEN RIVER AT MAMMOTH CAVE, KY.

LOCATION.--At Mammoth Cave Ferry crossing, 350 feet upstream from etage station, which is 0.2 mile downstream from Echo River, and 0.8 mile southwest of Mammoth Cave, Edmonson County.
DRAINAGE AREA.--1,983 square miles, of which 444 square miles does not contribute directly to surface runoff.
RECORDS AVAILABLE.--Chemical analyses: September 1959 to September 1965.
Water temperatures: October 1959 to June 1961.
REMARKS.--No discharge records available.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 3, 1964...		--		--						--	--	110	--	--	--	--	--		621	--	
Oct. 10........		--		--						--	--	82	--	--	--	--	--		539	--	
Oct. 17........		--		--						--	--	66	--	--	--	--	--		506	--	
Oct. 20,.......		--		0.09						156	24	64	0.2	1.8	279	174	46		503	7.6	
Oct. 24........		--		--						--	--	68	--	--	--	--	--		520	--	
Oct. 31........		--		--						--	--	84	--	--	--	--	--		587	--	
Nov. 7.........		--		--						--	--	86	--	--	--	--	--		609	--	
Nov. 14........		--		--						--	--	121	--	--	--	--	--		727	--	
Nov. 18........		--		.08						184	30	154	.3	1.3	453	232	81		839	7.6	
Nov. 21........		--		--						--	--	143	--	--	--	--	--		765	--	
Nov. 28........		--		--						--	--	34	--	--	--	--	--		364	--	
Dec. 1.........		--		--						--	--	54	--	--	--	--	--		427	--	
Dec. 5.........		--		--						--	--	26	--	--	--	--	--		294	--	
Dec. 12........		--		--						--	--	14	--	--	--	--	--		272	--	
Dec. 13........		--		--						--	--	17	--	--	--	--	--		253	--	
Dec. 16........		--		.21						106	14	16	.2	5.1	152	109	22		267	7.4	
Dec. 19........		--		--						--	--	31	--	--	--	--	--		332	--	
Dec. 27........		--		--						--	--	15	--	--	--	--	--		240	--	
Jan. 3, 1965...		--		--						--	--	28	--	--	--	--	--		332	--	
Jan. 9.........		--		--						--	--	17	--	--	--	--	--		275	--	
Jan. 21........		--		.16						114	17	26	.2	4.4	180	126	32		310	7.6	
Jan. 24........		--		--						--	--	27	--	--	--	--	--		320	--	
Jan. 31........		--		--						--	--	30	--	--	--	--	--		323	--	
Feb. 6.........		--		--						--	--	39	--	--	--	--	--		371	--	
Feb. 13........		--		--						--	--	10	--	--	--	--	--		216	--	
Feb. 16........		--		.16						102	14	15	.1	5.7	150	106	22		250	7.2	
Feb. 20........		--		--						--	--	22	--	--	--	--	--		297	--	
Feb. 27........		--		--						--	--	20	--	--	--	--	--		240	--	
Mar. 3.........		--		--						--	--	26	--	--	--	--	--		272	--	
Mar. 13........		--		--						--	--	19	--	--	--	--	--		261	--	
Mar. 16........		--		.18						118	16	30	.1	3.6	186	122	26		323	7.1	

GREEN RIVER BASIN--Continued

3-3090. GREEN RIVER AT MAMMOTH CAVE, KY.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Non-carbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Mar. 22, 1965..		--		--						--	--	18	--	--	--	--	--		256	--	
Mar. 27........		--		--						--	--	9.0	--	--	--	--	--		184	--	
Apr. 3.........		--		--						--	--	13	--	--	--	--	--		248	--	
Apr. 10........		--		--						--	--	10	--	--	--	--	--		220	--	
Apr. 13........		--		0.15						112	14	20	0.1	3.3	172	115	23		279	7.2	
Apr. 17........		--		--						--	--	19	--	--	--	--	--		288	--	
Apr. 24........		--		--						--	--	23	--	--	--	--	--		288	--	
May 1..........		--		--						--	--	24	--	--	--	--	--		288	--	
May 8..........		--		--						--	--	41	--	--	--	--	--		376	--	
May 15.........		--		--						--	--	65	--	--	--	--	--		475	--	
May 19.........		--		.10						140	17	54	.2	2.6	240	154	40		438	7.9	
May 22.........		--		--						--	--	81	--	--	--	--	--		513	--	
May 29.........		--		--						--	--	30	--	--	--	--	--		324	--	
June 12........		--		--						--	--	27	--	--	--	--	--		300	--	
June 15........		--		.13						134	15	48	.2	3.6	218	144	34		401	7.5	
June 19........		6.1		--						--	--	17	--	--	--	--	--		240	--	
June 27........		7.4		--						--	--	44	--	--	--	--	--		396	--	
July 3.........		4.8		--						--	--	30	--	--	--	--	--		314	--	
July 10........		6.3		--						--	--	16	--	--	--	--	--		249	--	
July 13........		--		.22						114	11	18	.2	4.6	151	118	24		278	7.4	
July 17........		7.7		--						--	--	27	--	--	--	--	--		341	--	
July 24........		7.6		--						--	--	52	--	--	--	--	--		459	--	
July 31........		5.8		--						--	--	60	--	--	--	--	--		468	--	
Aug. 7.........		5.0		--						--	--	76	--	--	--	--	--		558	--	
Aug. 10........		--		.47						168	19	60	.2	2.9	266	176	38		506	7.6	
Aug. 14........		7.3		--						--	--	90	--	--	--	--	--		608	--	
Aug. 28........		6.5		--						--	--	90	--	--	--	--	--		625	--	
Sept. 4........		7.3		--						--	--	149	--	--	--	--	--		796	--	
Sept. 11.......		7.1		--						--	--	230	--	--	--	--	--		1040	--	
Sept. 19.......		6.1		--						--	--	138	--	--	--	--	--		702	--	
Sept. 22.......		--		.20						133	19	74	.2	3.0	262	152	43		501	7.5	
Sept. 25.......		8.4		--						--	--	50	--	--	--	--	--		445	--	

GREEN RIVER BASIN--Continued

3-3091. WET PRONG BUFFALO CREEK NEAR MAMMOTH CAVE, KY.

LOCATION.--At staff gage, 280 feet upstream from Chicken Hollow, 5.0 miles northwest of Mammoth Cave, Edmonson County, and 5.8 miles northeast of Brownsville.
DRAINAGE AREA.--2.26 square miles.
RECORDS AVAILABLE.--Chemical analyses: Periodic, April to September 1965.
Sediment records: Periodic sampling October 1963 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
																Calcium, magnesium	Noncarbonate				
Apr. 29, 1965.	--			0.10	0.00					32	6.4	1.0	0.0	0.2		32	6		73	7.1	
June 28.......	1.21			.07	.03					36	4.8	1.0	.1	1.0		34	4		73	7.4	
Sept. 9.......	1.03			.11	.08					42	3.2	1.0	.1	.8	47	36	2		82	7.6	

Periodic determinations of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Oct. 6, 1964........	1555			0.7	43	0.1												
Oct. 13............	1515			.7	29	.1												
Oct. 30............	1440			.7	18	T												
Nov. 13............	1205			.7	8	T												
Nov. 18............	1115			.7	3	T												
Nov. 28............	1510			1.4	5	T												
Dec. 2.............	1430			1.2	2	T												
Dec. 4.............	1000			63	120	20												
Dec. 9.............	1335			1.7	2	T												
Dec. 18............	1045			1.4	5	T												
Dec. 27............	1000			2.8	13	.1												
Jan. 5, 1965........	1050			3.2	9	.1												
Jan. 19............	0930			2.0	12	.1												
Jan. 25............	0940			2.0	6	T												
Feb. 1.............	1030			1.4	8	T												
Feb. 8.............	1030			4.9	5	.1												
Feb. 13............	1100			19	9	.5												
Feb. 15............	1230			6.2	34	.6												
Feb. 21............	1400			2.0	10	.1												
Feb. 28............	0930			12	3	.1												
Mar. 3.............	1310			10	47	1.3												

T Less than 0.05 ton.

GREEN RIVER BASIN--Continued

3-3091. WET PRONG BUFFALO CREEK NEAR MAMMOTH CAVE, KY.--Continued

Periodic determinations of suspended sediment, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temper-ature (°F)	Sam-pling point	Discharge (cfs)	Sediment concen-tration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Mar. 7, 1965	1115			7.9	8	0.2												
Mar. 10	1310			3.2	5	T												
Mar. 18	1600			10	6	.2												
Mar. 24	1230			2.0	2	T												
Mar. 29	1345			143	80	31												
Apr. 5	1035			4.9	9	.1												
Apr. 15	1200			13	84	2.9												
Apr. 26	1225			6.2	8	1.3												
May 5	1225			1.7	2	T												
May 12	0945			.8	1	T												
June 2	1030			.4	5	T												
June 5	0845			.6	6	T												
June 9	1330			1.3	13	T												
June 17	1655			.7	5	T												
June 25	1125			1.7	4	T												
July 1	1545			2.0	14	.1												
July 8	1505			2.0	11	.1												
July 21	1600			1.4	5	T												
July 30	1510			1.3	4	T												
Aug. 6	1400			1.2	8	T												
Aug. 11	1020			1.4	8	T												
Aug. 18	1415			1.3	8	T												
Aug. 25	1100			1.4	7	T												
Sept. 1	1400			2.0	48	.3												
Sept. 7	1720			1.0	6	T												
Sept. 16	1010			1.5	8	T												
Sept. 22	1155			1.2	9	T												
Sept. 29	1515			1.2	7	T												

T Less than 0.05 ton.

GREEN RIVER BASIN--Continued

3-3110. NOLIN RIVER AT KYROCK, KY.

LOCATION.--Temperature recorder at gaging station on right bank, 470 feet downstream from Dismal Creek, 0.3 mile downstream from Nolin River Dam, 1.2 miles upstream from Pigeon Creek, 0.9 mile northeast of Kyrock, Edmonson County, and 7.5 miles upstream from mouth.
DRAINAGE AREA.--707 square miles (including that of Dismal Creek), of which about 223 square miles does not contribute directly to surface runoff.
RECORDS AVAILABLE.--Chemical analyses: October 1964 to September 1965.
Water temperatures: September 1962, unpublished; October 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 78°F Aug. 20-23.
EXTREMES, 1962-65.--Water temperatures: Maximum, 78°F Aug. 20-23, 1965; minimum, 34°F Jan. 31 to Feb. 6, 1963.
REMARKS.--No temperature record available Nov. 19 to Jan. 5, Jan. 7 to Feb. 1, Feb. 3 to Mar. 1, and Mar. 3-31. Minimum temperature may have occurred during this period. Flow regulated by Nolin River Reservoir.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 21, 1964.	948			0.36						158	9.6	4.0	0.3	3.8	168	139	10		277	8.0	
Nov. 18.......	773			.06						162	15	5.0	.3	1.7	173	146	13		295	7.8	
Dec. 16.......	1310			.50						108	16	3.5	.2	4.8	138	104	16		220	7.4	
Jan. 21, 1965.	822			.25						116	14	3.0	.2	4.6	142	110	15		224	7.5	
Feb. 17.......	3560			.22						131	14	4.0	.1	5.1	162	124	16		252	7.6	
Mar. 17.......	1800			.24						119	12	4.0	.1	5.7	150	116	18		233	7.2	
Apr. 14.......	1590			.19						105	14	3.0	.1	4.2	142	101	15		207	7.2	
May 19........	80			.16						107	10	3.0	.2	3.9	134	99	12		220	7.5	
June 16.......	222			.06						112	10	3.0	.2	2.7	110	102	10		212	7.5	
July 14.......	514			.06						134	10	3.0	.2	3.2	130	123	13		248	7.5	
Aug. 10.......	70			1.4						134	11	3.0	.2	3.4	136	124	14		248	8.0	
Sept. 22......	844			1.6						134	7.2	3.0	.1	2.7	148	119	9		240	7.2	

GREEN RIVER BASIN--Continued

3-3110. NOLIN RIVER AT KYROCK, KY.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	66	66	66	66	65	65	65	64	62	62	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	60	60	62
Minimum	66	66	66	65	65	65	64	62	62	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	60	60	60	62
November																																
Maximum	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	--	--	--	--	--	--	--	--	--	--	--	--	--	--
December																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
January																																
Maximum	--	--	--	--	--	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
February																																
Maximum	--	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
March																																
Maximum	--	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
April																																
Maximum	48	48	48	48	48	49	49	49	49	49	49	49	49	49	49	49	50	50	50	58	58	58	58	60	60	60	60	60	60	60	--	53
Minimum	48	48	48	48	48	48	49	49	49	49	49	49	49	49	49	49	49	50	50	50	58	58	58	58	60	60	60	60	60	60	--	52
May																																
Maximum	60	60	60	60	61	62	63	63	63	63	64	64	64	64	64	64	64	64	64	66	66	66	66	66	66	66	66	66	66	66	66	64
Minimum	60	60	60	60	60	61	62	63	63	63	63	64	64	64	64	64	64	64	64	64	66	66	66	66	66	66	66	66	66	66	66	64
June																																
Maximum	66	66	67	67	68	68	68	62	58	68	68	68	68	69	69	69	69	69	69	69	69	69	70	70	70	70	70	70	70	70	70	68
Minimum	66	66	66	67	67	68	62	58	58	58	68	68	68	68	69	69	69	69	69	69	69	69	69	70	70	70	70	70	70	70	70	67
July																																
Maximum	70	70	70	70	70	70	70	70	70	70	57	70	70	70	70	71	71	71	73	73	73	73	73	74	74	74	74	74	76	76	73	71
Minimum	70	70	70	70	70	70	70	70	70	57	57	57	70	70	70	70	71	71	71	73	73	73	73	73	74	74	74	74	74	63	63	70
August																																
Maximum	73	73	74	75	76	76	76	75	76	76	76	76	76	76	76	76	76	77	77	78	78	78	78	75	73	72	72	72	72	72	72	75
Minimum	73	73	73	74	75	76	75	75	75	75	76	76	76	76	76	76	76	76	76	75	78	78	75	68	70	72	72	72	72	72	70	74
September																																
Maximum	71	74	74	74	74	75	75	75	60	60	60	61	61	61	58	58	58	57	57	58	58	58	58	58	58	58	60	61	61	61	--	63
Minimum	70	71	74	74	73	74	75	60	60	60	60	60	61	58	58	58	57	57	57	57	58	58	58	58	58	58	58	60	61	61	--	62

GREEN RIVER BASIN--Continued

3-3130. BARREN RIVER NEAR FINNEY, KY.

LOCATION.--Temperature recorder at gaging station on left bank in Allen County, 1,200 feet upstream from Port Oliver Ford, 2,500 feet upstream from Difficult Creek, 0.5 mile downstream from Barren River Dam, and 2.1 miles southwest of Finney, Barren County.
DRAINAGE AREA.--940 square miles, of which about 77 square miles does not contribute directly to surface runoff.
RECORDS AVAILABLE.--Water temperatures: August and September 1961 (unpublished); November 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 80°F during several days in August; minimum, 44°F Mar. 4-10.
EXTREMES, 1962-65.--Water temperatures: Maximum, 91°F July 3, 4, 8, 9, 1963; minimum recorded, 33°F during period Nov. 24, 1963 to Jan. 7, 1964.
REMARKS.--Once-daily temperature readings during the period May to July when the thermograph was not working, were furnished by the Corps of Engineers, Louisville, Ky., and by U.S. Geological Survey personnel. Clock stopped Oct. 5-8, range 66°F to 68°F; Oct. 11 to Nov. 3, range 59°F to 64°F. Recorder removed Nov. 3 and sent to factory for repairs. Temperature attachment not installed on repaired recorder until Mar. 1. Flow regulated by Barren River Reservoir.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maximum	68	68	68	68	—	—	—	—	66	65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Minimum	68	68	68	68	—	—	—	—	65	64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
November	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maximum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Minimum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
December	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	48	—	—
Maximum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Minimum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
January	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maximum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Minimum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
February	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maximum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Minimum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
March	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maximum	45	45	45	45	44	44	44	44	44	45	45	45	45	45	45	47	47	47	47	47	47	47	47	47	47	47	47	48	48	48	48	46
Minimum	45	45	45	44	44	44	44	44	44	44	45	45	45	45	45	45	47	47	47	47	47	47	47	47	47	47	47	47	48	48	48	46
April	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maximum	48	50	50	51	52	52	48	47	47	47	48	48	48	48	48	48	48	48	49	49	50	52	52	52	52	52	53	53	55	57	—	50
Minimum	47	48	50	50	51	48	47	47	47	47	47	48	48	48	48	48	48	48	48	49	49	50	49	52	52	51	52	53	53	54	—	49
May	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	56	—	—	57	—	—	—	57	—
Maximum	59	59	61	61	63	65	65	65	65	64	64	64	64	65	65	65	64	65	66	—	—	—	—	—	—	—	—	—	—	—	—	—
Minimum	57	59	59	60	61	63	64	64	64	64	64	64	63	63	64	64	64	64	65	65	—	—	—	—	—	—	—	—	—	—	—	—
June	—	72	69	—	—	—	70	—	—	71	—	—	—	72	—	—	69	—	—	—	76	—	—	76	—	—	—	77	—	—	—	—
Maximum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Minimum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
July	74	—	—	—	72	—	58	57	—	—	—	57	—	—	76	—	—	—	74	—	—	74	—	—	—	—	—	—	—	—	—	—
Maximum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	79	79	79	76	74	74	—
Minimum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	79	76	74	74	74	—
August	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maximum	74	74	75	77	79	80	80	80	80	80	79	79	79	79	79	80	80	80	79	80	80	79	79	78	78	78	78	78	76	76	76	78
Minimum	74	74	74	75	77	79	80	79	79	79	78	78	79	78	78	78	78	78	78	78	79	78	78	78	78	74	78	76	76	76	74	77
September	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maximum	74	74	74	74	74	75	76	—	58	58	58	58	58	—	—	—	—	—	—	—	—	—	65	65	65	65	65	65	65	65	—	—
Minimum	74	74	74	74	74	74	74	—	58	58	58	58	58	—	—	—	—	—	—	—	—	—	65	65	65	65	65	65	65	65	—	—

GREEN RIVER BASIN--Continued

3-3145. BARREN RIVER AT BOWLING GREEN, KY.

LOCATION.--At gaging station at College Street bridge, 600 feet downstream from bridge on U.S. Highways 31-W and 68 at Bowling Green, Warren County, 800 feet upstream from Louisville and Nashville Railroad bridge, 6 miles from Drakes Creek, and 8.9 miles upstream from Jennings Creek.

DRAINAGE AREA.--1,848 square miles, of which about 490 square miles does not contribute directly to surface runoff.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950, October 1959 to September 1960.
Water temperatures: October 1949 to September 1965.
Sediment records: November 1952 to September 1960.

EXTREMES, 1964-65.--Water temperatures: Maximum, 84°F on July 25; minimum, freezing point on several days during January and February.

EXTREMES, 1949-65.--Water temperatures: Maximum, 87°F July 1, 2, 22, 29, 1952; minimum, freezing point on many days during winter months.

REMARKS.--Flow partly regulated by Barren River Reservoir.

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0630 and 1730)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
0630......	60	62	60	65	65	62	60	60	58	59	58	58	57	58	60	59	58	60	58	56	57	59	56	55	55	54	55	54	54	53	--	58
1730......	68	67	70	68	65	65	64	63	65	60	60	62	63	64	65	65	64	63	63	62	61	61	57	58	58	58	60	58	58	58	--	62
November																																
0630......	58	54	54	56	57	54	--	57	54	53	53	53	54	54	58	56	59	58	51	50	42	44	41	42	45	48	45	48	48	36	--	51
1730......	60	59	60	62	60	61	--	60	59	59	58	60	60	61	60	60	61	60	50	52	45	47	46	48	49	50	50	51	41	40	--	55
December																																
0630......	34	42	43	50	48	44	43	40	38	42	43	47	51	45	40	41	45	40	36	41	40	42	42	50	47	43	43	41	43	45	45	43
1730......	40	48	48	49	49	47	48	47	46	45	50	51	52	48	45	45	47	38	38	43	41	46	50	48	50	45	47	46	50	50	49	47
January																																
0630......	41	50	48	45	45	45	48	52	51	43	32	37	45	39	40	40	32	32	33	35	34	39	42	43	42	43	40	42	40	36	32	41
1730......	51	50	50	50	49	50	53	56	50	48	45	43	47	43	45	38	35	39	39	40	40	44	46	46	48	45	44	40	43	35	34	45
February																																
0630......	32	32	32	32	33	35	42	40	45	43	--	44	44	34	34	34	35	34	35	40	48	40	38	40	32	35	35	45	--	--	--	38
1730......	32	32	32	35	40	40	44	45	48	--	47	49	50	41	43	47	49	39	44	48	48	42	44	38	--	40	50	53	--	--	--	43
March																																
0630......	45	45	41	40	36	36	40	40	36	38	34	34	42	42	40	45	39	35	35	32	40	41	43	45	45	45	45	46	47	50	50	41
1730......	50	50	43	38	40	43	43	45	44	42	45	45	47	47	46	52	52	46	40	35	45	47	48	46	45	48	50	53	50	54	53	46
April																																
0630......	38	50	50	54	54	55	57	62	60	61	57	61	55	54	55	54	60	54	57	57	58	56	60	61	61	60	58	54	52	54	--	56
1730......	55	55	55	55	57	60	61	65	65	66	65	66	56	61	62	65	66	65	65	65	66	65	66	65	65	65	63	58	58	61	--	62
May																																
0630......	60	61	61	62	64	64	64	67	65	65	70	70	70	69	68	70	70	70	70	69	70	69	72	70	71	68	68	65	64	62	68	67
1730......	65	67	66	68	69	69	71	72	73	74	72	72	71	72	71	71	71	70	71	71	72	75	74	73	74	72	71	70	69	69	71	71
June																																
0630......	63	63	65	--	--	69	70	74	74	--	74	74	75	73	69	68	69	68	65	70	68	70	73	69	70	71	76	75	75	75	--	71
1730......	66	68	71	--	--	72	75	76	76	72	77	76	76	76	72	72	70	71	72	73	75	75	75	74	74	78	79	79	80	79	--	74
July																																
0630......	75	75	75	75	75	75	75	70	70	71	72	70	65	55	55	59	65	71	65	74	75	75	75	75	80	71	75	79	79	78	75	73
1730......	79	80	80	81	80	81	78	73	78	79	80	72	69	70	71	71	74	73	79	79	81	81	82	83	84	83	82	82	82	81	81	78
August																																
0630......	76	75	72	74	75	75	76	76	75	75	75	75	75	75	80	80	80	80	79	79	80	82	80	79	80	80	80	79	74	71	--	77
1730......	80	76	79	79	80	80	79	80	79	78	78	79	80	81	83	83	82	83	82	82	83	83	82	81	82	82	82	81	80	80	79	81
September																																
0630......	70	69	74	75	76	75	--	--	--	--	--	65	64	65	65	64	64	64	70	65	65	66	64	62	59	64	60	60	60	62	--	66
1730......	75	81	80	80	80	--	--	--	--	--	--	68	70	72	69	68	72	72	75	69	70	71	69	68	65	69	67	67	68	67	--	71

GREEN RIVER BASIN--Continued

3-3155. GREEN RIVER AT LOCK 4, AT WOODBURY, KY.

LOCATION.--Temperature recorder at gaging station on left bank, 0.1 mile upstream from lock 4, at Woodbury, Butler County, 0.4 mile downstream from Barren River, and at mile 149.1.
DRAINAGE AREA.--5,403 square miles, of which about 1,360 square miles does not contribute directly to surface runoff.
RECORDS AVAILABLE.--Water temperatures: October 1958 to May 1965 (discontinued).
EXTREMES, 1958-65.--Water temperatures: Maximum, 89°F Aug. 4, 1964; minimum, 33°F Jan. 28 to Feb. 5, 1961, Jan. 26-28, 1963.
REMARKS.--No temperature record Jan. 6 to Apr. 4 and May 5-24 when recorder not operating; dam No. 4 washed out at 2400 May 24, 1965, leaving thermograph out of water. Flow partly regulated by Nolin River Reservoir and Barren River Reservoir.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	64	64	65	64	64	64	63	62	62	62	62	61	61	61	61	62	61	61	60	60	60	59	59	58	58	58	59	58	58	58	58	61
Minimum	63	64	64	64	63	63	62	62	62	62	61	60	60	60	60	60	60	60	60	60	59	59	58	58	58	58	58	58	58	58	58	60
November																																
Maximum	58	59	59	59	59	59	59	58	58	57	57	57	58	58	58	59	59	59	58	57	55	54	52	52	51	50	49	49	49	48	--	56
Minimum	58	58	58	59	58	58	58	58	57	57	57	57	57	57	57	58	58	58	57	55	54	52	51	51	50	48	47	48	48	47	--	55
December																																
Maximum	47	48	48	48	49	49	49	48	47	46	46	47	48	48	48	48	47	47	46	46	45	45	45	45	46	48	48	48	48	47	48	47
Minimum	45	45	48	47	48	49	48	47	46	46	45	46	47	48	48	47	47	46	46	45	45	45	45	44	44	46	48	48	47	47	47	46
January																																
Maximum	48	48	48	48	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	48	48	48	48	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
February																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
March																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
April																																
Maximum	--	--	--	--	56	57	58	59	60	60	60	59	59	59	59	59	59	59	59	59	59	59	60	61	61	61	61	61	62	62	--	60
Minimum	--	--	--	--	56	56	57	58	59	60	59	59	59	59	59	59	59	59	59	59	59	59	59	60	61	61	61	61	61	62	--	59
May																																
Maximum	62	65	65	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	62	62	64	64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
July																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
August																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
September																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

GREEN RIVER BASIN--Continued

3-3180.1. ROUGH RIVER AT ROUGH RIVER DAM, NEAR FALLS OF ROUGH, KY.

LOCATION.--Temperature recorder at stage station on left bank, 800 feet downstream from centerline of Rough River Dam, 1.5 miles upstream from Cane Run, 3.1 miles upstream from Rock Lick Creek, and 3.5 miles northeast of Falls of Rough, Grayson County, Ky.
DRAINAGE AREA.--454 square miles, of which about 110 square miles does not contribute directly to surface runoff.
RECORDS AVAILABLE.--Water temperatures: July 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 69°F July 7, Sept. 28, 29; minimum, 36°F Jan. 21-24, Feb. 3, 5.
EXTREMES, 1962-65.--Water temperatures: Maximum, 72°F Sept. 16, 26-29, 1962; minimum, 36°F on Jan. 21-24, Feb. 3, 5, 1965.
REMARKS.--Flow regulated by Rough River Reservoir.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	68	68	68	68	67	67	67	67	66	66	65	64	64	64	64	64	64	63	63	63	63	62	62	62	61	61	60	60	60	60	60	64
Minimum	68	67	67	67	67	67	67	66	66	65	64	64	64	64	64	63	63	63	63	63	62	62	62	61	61	60	60	60	60	60	60	64
November																																
Maximum	60	60	60	61	61	60	60	60	59	59	58	58	58	58	57	56	56	56	56	56	55	53	51	50	49	49	47	47	47	47	--	55
Minimum	60	60	60	60	61	60	60	59	59	59	58	58	58	57	56	56	56	56	56	55	53	51	50	49	49	47	47	47	45	45	--	55
December																																
Maximum	46	44	42	42	42	43	43	42	43	42	41	41	43	44	44	42	44	45	43	41	41	40	39	40	40	41	42	42	41	42	43	42
Minimum	45	42	42	42	42	42	40	40	39	41	41	41	41	41	42	41	41	42	40	39	40	39	39	38	40	40	41	41	41	41	42	41
January																																
Maximum	43	45	46	46	46	44	45	44	46	46	46	44	44	45	44	44	45	42	44	40	41	38	36	38	38	39	41	41	42	42	46	43
Minimum	42	43	44	45	44	44	44	44	44	46	44	44	44	43	42	42	39	39	37	37	36	36	36	36	37	38	39	38	39	38	37	41
February																																
Maximum	42	45	44	42	42	38	38	37	37	38	41	43	44	45	46	44	46	47	46	47	47	47	47	45	46	45	44	42	--	--	--	43
Minimum	38	37	36	37	36	37	37	37	37	37	38	41	43	43	44	44	44	45	45	45	45	45	45	45	44	42	40	40	--	--	--	41
March																																
Maximum	42	42	43	43	42	41	41	40	40	40	41	40	41	41	42	41	41	42	43	44	44	42	43	43	43	43	43	42	43	43	43	42
Minimum	41	41	41	42	41	41	40	40	39	39	38	38	39	39	39	39	40	41	42	42	42	41	41	43	43	42	42	42	42	43	43	41
April																																
Maximum	44	44	44	44	44	44	44	44	45	46	47	46	46	46	46	46	48	48	50	49	48	48	48	48	48	48	48	49	49	49	--	47
Minimum	43	44	44	44	44	44	44	44	44	45	46	46	46	46	46	46	46	47	48	47	47	47	47	47	47	48	48	48	49	48	--	46
May																																
Maximum	49	50	50	51	51	51	51	50	50	50	51	51	51	51	52	52	52	52	52	52	52	52	52	52	52	52	52	51	51	51	51	51
Minimum	48	48	48	49	50	50	50	50	50	50	50	50	51	51	51	52	52	52	52	52	52	52	52	52	52	51	51	51	51	51	50	51
June																																
Maximum	51	52	52	52	52	52	52	52	52	52	54	54	54	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	56	55	--	53
Minimum	51	51	52	52	52	52	52	52	52	52	52	54	53	53	53	53	53	53	54	54	53	53	53	53	53	54	54	54	54	54	--	53
July																																
Maximum	54	54	54	54	54	54	69	54	54	54	54	54	54	54	54	55	54	55	55	55	55	55	55	57	56	56	56	56	56	56	56	55
Minimum	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55	55	55	55	55	54
August																																
Maximum	56	56	56	55	54	55	55	55	56	55	56	57	57	58	57	56	61	59	58	58	59	60	60	60	62	61	62	62	61	61	61	58
Minimum	55	55	55	54	54	54	55	55	55	55	55	56	56	56	56	56	56	58	58	58	58	59	60	59	60	60	60	60	61	60	60	57
September																																
Maximum	61	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	62	63	64	65	65	65	66	66	68	69	69	67	--	62
Minimum	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	62	63	64	65	65	65	66	66	67	66	66	--	62

GREEN RIVER BASIN--Continued

3-3195. ROUGH RIVER AT DUNDEE, KY.

LOCATION.--At auxiliary gaging station at bridge on State Highway 69 at Dundee, Ohio County, 7.1 miles downstream from Caney Creek, and 5.6 miles downstream from gaging station near Dundee.
DRAINAGE AREA.--770 square miles, of which about 122 square miles does not contribute directly to surface runoff.
RECORDS AVAILABLE.--Water temperatures: October 1949 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 81°F Aug. 16, 18, 20; minimum, freezing point Jan. 31, Feb. 2-6.
EXTREMES, 1949-65.--Water temperatures: Maximum, 89°F Aug. 3, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Stream frozen Jan. 31, Feb. 2-6. Flow regulated by Rough River Reservoir. Records of discharge given for gaging station near Dundee.

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0700 and 1600)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
0700......	62	64	63	63	62	60	59	60	61	59	58	59	60	60	61	59	61	60	61	59	55	59	57	56	55	56	58	59	60	60	58	59
1600......	65	66	64	65	63	61	62	62	60	59	59	60	62	62	62	63	60	61	60	55	60	59	59	57	56	58	60	61	61	60	59	61
November																																
0700......	57	56	57	56	57	56	55	55	54	54	56	57	57	55	59	60	60	59	59	51	45	40	44	43	48	47	48	48	47	42	--	53
1600......	59	58	59	58	59	56	55	56	56	57	58	59	57	58	61	62	61	60	57	50	43	48	47	46	49	48	49	49	48	42	--	54
December																																
0700......	43	44	46	46	46	42	40	39	40	41	43	44	44	42	40	40	42	36	33	34	36	36	41	45	46	44	42	41	42	44	43	41
1600......	44	46	45	47	45	41	40	39	41	41	45	46	43	42	40	41	40	35	34	34	37	37	43	47	46	43	43	40	43	45	44	42
January																																
0700......	44	45	44	42	42	43	45	47	48	45	40	41	43	40	40	39	35	34	33	34	35	36	41	42	41	43	40	40	37	36	32	40
1600......	47	44	45	43	44	45	47	49	47	44	41	42	42	40	41	39	35	34	35	36	37	40	42	41	42	42	40	39	37	34	32	41
February																																
0700......	33	32	32	32	32	32	34	42	42	46	47	46	45	45	44	38	40	42	43	42	45	40	40	43	42	36	38	40	--	--	--	40
1600......	34	32	32	32	32	32	38	43	44	48	47	46	45	46	40	37	40	43	44	43	44	39	41	42	40	37	37	41	--	--	--	40
March																																
0700......	44	47	46	44	41	39	40	40	40	38	39	40	40	39	40	41	42	41	40	39	39	42	44	43	42	40	39	41	42	46	47	41
1600......	45	48	45	43	40	39	41	41	40	38	40	39	41	41	42	43	44	43	40	40	40	43	45	44	41	40	39	42	44	47	48	42
April																																
0700......	46	48	49	48	50	54	55	58	59	57	60	61	56	52	50	52	54	51	50	55	55	60	62	65	65	60	63	59	58	58	--	56
1600......	49	51	49	50	52	56	56	60	59	56	60	60	55	51	50	53	53	52	54	57	58	63	66	67	67	65	62	60	61	63	--	57
May																																
0700......	59	61	62	63	65	66	65	69	69	68	67	68	66	67	68	71	68	70	68	67	67	69	71	70	69	70	70	72	67	68	66	67
1600......	62	63	64	64	67	68	67	69	69	70	69	68	69	69	70	70	70	72	70	69	71	72	71	72	71	72	71	70	69	69	69	69
June																																
0700......	69	68	69	68	69	70	68	68	70	68	70	72	69	70	71	67	69	68	69	70	69	71	72	70	69	70	70	72	73	74	--	70
1600......	70	70	71	70	71	69	69	70	71	71	72	73	71	72	69	68	70	69	70	70	71	72	72	71	70	72	70	73	74	73	--	71
July																																
0700......	72	71	73	72	72	73	73	72	75	76	73	73	74	75	74	74	77	74	76	75	75	74	74	76	78	75	76	75	74	72	73	74
1600......	73	73	74	73	74	74	75	74	76	75	74	73	75	76	75	76	77	75	78	76	77	76	78	80	77	79	77	76	76	75	74	76
August																																
0700......	70	71	70	69	71	74	74	73	71	70	71	70	73	74	77	79	79	79	80	79	77	77	78	77	78	77	76	74	70	70	71	74
1600......	71	72	70	72	73	75	76	74	73	72	72	73	74	76	78	81	80	81	80	81	80	80	79	79	80	78	76	74	71	72	71	76
September																																
0700......	70	67	65	68	70	71	72	72	72	71	70	70	69	70	71	69	70	73	72	71	66	66	64	62	60	60	61	63	65	67	--	68
1600......	70	68	67	70	71	72	73	72	73	72	70	70	71	72	71	71	72	74	74	73	67	67	65	60	59	60	61	64	65	68	--	69

WABASH RIVER BASIN

3-3235. WABASH RIVER AT HUNTINGTON, IND.

LOCATION.--Temperature recorder at gaging station on right bank at the Huntington Water and Light Company Plant, 2 miles south of courthouse in Huntington, Huntington County, 3.2 miles upstream from mouth of Little River, and at mile 409.
DRAINAGE AREA.--710 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 88°F July 24; minimum, freezing point Dec. 17, 18, Jan. 22, Feb. 9, 10.
EXTREMES, 1963-65.--Water temperatures: Maximum, 90°F July 27, 1964; minimum, freezing point several days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	66	65	64	63	62	60	58	56	56	54	54	54	57	58	59	60	60	60	56	55	53	54	53	54	54	54	56	58	58	56	54	57
Minimum	60	64	60	60	58	56	54	55	54	52	52	52	53	54	55	56	56	56	55	52	51	52	52	50	52	52	54	56	56	54	52	55
November																																
Maximum	54	56	58	58	60	58	54	54	54	54	57	57	57	54	54	56	56	52	51	48	42	43	43	44	43	44	44	45	44	40	--	51
Minimum	52	54	56	56	57	54	53	53	52	52	54	56	54	50	52	54	52	50	48	42	38	38	38	39	40	42	44	44	40	38	--	48
December																																
Maximum	38	38	38	37	37	37	36	36	35	35	35	34	34	34	33	37	33	35	35	35	37	37	35	36	33	35	36	36	35	37	37	36
Minimum	38	38	37	37	37	36	36	35	35	35	34	34	34	33	33	33	32	32	35	33	34	33	33	33	33	33	33	33	33	35	35	34
January																																
Maximum	37	37	37	36	35	37	38	44	44	39	35	34	34	33	33	33	33	33	33	33	33	33	33	33	33	33	33	34	35	35	35	35
Minimum	36	37	36	34	34	35	37	38	39	35	33	33	33	33	33	33	33	33	33	33	33	32	33	33	33	33	33	33	33	33	33	34
February																																
Maximum	34	34	34	34	34	34	33	33	33	37	38	40	39	38	37	39	40	40	40	41	41	38	38	38	37	37	37	37	--	--	--	37
Minimum	33	34	34	34	34	33	33	33	32	32	37	38	37	36	35	37	38	39	38	39	37	37	38	37	37	37	37	37	--	--	--	36
March																																
Maximum	37	37	37	36	37	37	38	38	39	39	40	41	42	42	42	43	43	43	41	40	40	41	41	40	40	39	41	42	43	42	44	40
Minimum	37	37	36	36	36	37	37	38	38	39	39	40	41	41	41	41	42	41	38	37	37	38	38	38	38	38	37	40	42	41	42	39
April																																
Maximum	44	44	44	44	45	50	53	53	53	53	54	54	54	54	53	53	52	52	54	56	58	61	60	60	54	52	52	53	56	60	--	53
Minimum	43	42	42	44	44	45	50	53	53	52	52	54	53	53	53	50	50	50	51	52	55	56	58	54	52	52	52	52	53	56	--	51
May																																
Maximum	63	66	68	68	70	70	74	74	74	73	72	72	74	74	73	74	73	74	76	76	76	80	80	80	74	72	72	70	65	64	70	72
Minimum	58	60	62	66	66	68	67	71	71	71	66	66	66	67	70	70	68	68	70	70	68	74	76	70	72	71	70	65	62	62	64	68
June																																
Maximum	72	72	70	72	76	78	77	76	77	80	80	80	80	80	78	76	75	76	78	78	80	80	79	80	81	82	84	84	83	81	--	78
Minimum	68	70	66	66	69	74	73	72	74	76	76	73	73	73	72	72	70	68	70	72	74	73	76	76	73	73	76	80	78	76	--	73
July																																
Maximum	80	80	80	80	82	82	81	81	81	81	83	84	84	82	80	79	80	80	74	76	77	81	84	88	85	84	84	84	81	78	77	81
Minimum	75	74	72	74	76	76	78	75	78	76	76	77	78	76	73	73	75	72	72	71	70	76	80	83	80	78	80	78	76	72	73	76
August																																
Maximum	76	75	76	78	84	86	85	80	77	76	78	80	81	84	86	87	87	84	83	81	80	75	77	78	76	79	79	78	73	70	68	79
Minimum	72	69	67	72	74	80	80	77	72	70	70	72	76	78	80	82	80	80	78	74	73	72	70	68	70	72	74	71	64	66	66	73
September																																
Maximum	72	72	74	76	78	76	78	79	80	80	78	70	73	76	76	73	72	77	79	78	77	76	74	71	64	63	62	64	68	69	--	74
Minimum	68	66	66	71	73	70	72	76	76	77	68	66	69	71	72	66	65	72	74	76	75	74	70	64	60	60	59	59	62	64	--	69

WABASH RIVER BASIN--Continued

3-3408. BIG RACCOON CREEK NEAR FINCASTLE, IND.

LOCATION.--At gaging station at county road bridge, 8,350 feet upstream from Ramp Creek, and 3.1 miles northwest of Fincastle, Putnam County.
DRAINAGE AREA.--132 square miles.
RECORDS AVAILABLE.--Water temperatures: July to September 1965.
Sediment records: August 1959 to September 1965.
EXTREMES, 1964-65.--Water temperatures (July to September 1965): Maximum, 82°F July 13, 24, Aug. 15.
Sediment concentrations: Maximum daily, 1,600 ppm Apr. 6; minimum daily, 3 ppm Jan. 11, May 2.
Sediment loads: Maximum daily, 9,940 tons Apr. 6; minimum daily, less than 0.50 ton on many days during October to January, May, July, and September.
EXTREMES, 1959-65.--Sediment concentrations: Maximum daily, 19,100 ppm Mar. 21, 1962; minimum daily, 3 ppm on several days in 1961, 1963, and 1965.
Sediment loads: Maximum daily, 260,000 tons Mar. 21, 1962; minimum daily, less than 0.50 ton on many days during 1959-65.
REMARKS.--Flow affected by ice Jan. 14-22, 27-31, Feb. 1-7, 21-28, Mar. 1, 21, 22. Sediment discharges computed from field and laboratory data supplied by Indiana Flood Control and Water Resources Commission, from October through March.

Temperature (°F) of water, July to September 1965
(Once-daily measurement between 1500 and 1800)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
July..........	78	75	80	78	80	78	76	75	74	78	72	81	82	79	80	80	72	73	75	78	79	80	80	82	76	78	81	76	74	72	72	77
August........	72	67	63	72	74	80	76	79	70	75	77	76	80	81	82	78	78	78	75	71	73	70	70	72	70	--	73	70	66	64	69	73
September.....	70	69	66	69	74	74	76	70	69	68	73	70	68	73	68	72	68	75	74	73	74	72	71	68	70	68	67	72	73	71	--	71

WABASH RIVER BASIN--Continued

3-3408. BIG RACCOON CREEK NEAR FINCASTLE, IND.--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	2.4	16	T	8.1	30	1	7.2	42	1
2..	2.2	18	T	7.8	26	1	6.8	30	1
3..	2.0	22	T	7.8	33	1	7.2	34	1
4..	2.0	37	T	7.8	41	1	8.5	38	1
5..	1.8	51	T	7.5	33	1	9.6	26	1
6..	1.8	53	T	7.5	32	1	8.1	16	T
7..	2.2	52	T	7.2	43	1	7.8	52	1
8..	2.0	57	T	7.2	42	1	7.5	70	1
9..	2.6	51	T	7.2	53	1	7.5	75	2
10..	3.1	47	T	6.8	44	1	7.8	75	2
11..	3.6	42	T	6.8	37	1	10	76	2
12..	3.1	35	T	6.5	39	1	12	76	2
13..	3.6	35	T	7.5	63	1	12	80	2
14..	3.8	35	T	6.2	64	1	13	88	3
15..	4.1	35	T	6.2	42	1	11	70	2
16..	4.1	35	T	17	52	2	10	52	1
17..	3.8	35	T	15	64	3	9.2	60	1
18..	4.6	35	T	10	53	1	7.8	52	1
19..	5.5	35	1	7.8	42	1	7.8	78	2
20..	5.5	35	1	6.5	28	T	7.8	58	1
21..	5.8	35	1	5.8	18	T	7.5	46	1
22..	6.8	35	1	5.2	15	T	7.8	67	1
23..	6.5	35	1	4.9	15	T	8.1	73	2
24..	6.2	35	1	4.9	30	T	9.6	56	1
25..	6.5	35	1	4.9	17	T	12	96	3
26..	6.5	35	1	4.9	15	T	13	104	4
27..	6.8	35	1	5.2	22	T	12	99	3
28..	6.8	35	1	8.8	18	T	12	54	2
29..	7.5	48	1	8.8	34	1	11	26	1
30..	8.1	47	1	8.1	35	1	11	21	1
31..	8.1	36	1	--	--	--	11	17	1
Total	139.4	--	18	225.9	--	27	293.6	--	48

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	28	16	1	23	29	2	500	130	176
2..	115	10	3	21	35	2	720	82	159
3..	87	11	3	19	47	2	428	35	40
4..	48	14	2	17	74	3	481	68	S 97
5..	36	16	2	17	62	3	428	82	95
6..	30	17	1	20	48	3	302	66	54
7..	26	18	1	25	22	1	278	62	46
8..	27	19	1	53	11	2	290	55	43
9..	37	18	2	204	117	S 154	255	35	24
10..	48	12	2	2130	1300	7480	200	26	14
11..	38	3	T	775	590	1230	159	21	9
12..	32	12	1	481	510	662	149	19	8
13..	28	27	2	302	373	304	140	8	3
14..	16	42	2	233	254	160	130	6	2
15..	13	45	2	170	219	100	128	9	3
16..	12	24	1	149	197	79	119	11	4
17..	12	45	1	130	154	54	140	43	16
18..	12	58	2	125	98	33	169	145	66
19..	12	56	2	112	96	29	114	98	30
20..	12	82	3	93	88	22	93	28	7
21..	13	67	2	78	105	22	84	7	2
22..	14	48	2	63	64	11	80	7	2
23..	56	91	S 15	50	34	5	130	13	5
24..	244	278	183	40	40	4	290	46	36
25..	159	188	81	26	39	3	190	44	22
26..	116	110	34	20	24	1	149	62	25
27..	60	54	9	20	19	1	117	40	13
28..	45	32	4	60	43	7	114	40	12
29..	35	46	4	--	--	--	125	22	7
30..	28	37	3	--	--	--	125	19	6
31..	25	33	2	--	--	--	112	28	8
Total	1464	--	373	5456	--	10379	6739	--	1034

S Computed by subdividing day.
T Less than 0.50 ton.

WABASH RIVER BASIN--Continued

3-3408. BIG RACCOON CREEK NEAR FINCASTLE, IND.--Continued

Suspended sediment, water year October 1984 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	110	22	7	149	8	3	64	25	B 4
2..	107	22	6	125	3	1	333	--	240
3..	89	14	3	105	8	2	255	--	70
4..	85	31	7	90	14	3	149	40	B 16
5..	290	294	S 575	97	7	2	102	30	B 8
6..	2300	1600	9940	92	4	1	346	--	2500
7..	870	411	965	98	12	3	417	--	1400
8..	570	400	616	82	20	4	200	--	10
9..	1500	980	3970	75	12	2	149	--	7
10..	600	539	873	73	6	1	104	--	4
11..	600	500	A 800	66	5	1	85	--	3
12..	600	460	A 750	61	6	1	71	--	3
13..	376	370	376	58	7	1	57	--	2
14..	268	324	234	54	12	2	48	--	2
15..	326	555	488	50	21	3	40	--	2
16..	428	525	607	49	19	3	36	--	1
17..	302	240	196	45	4	T	32	--	1
18..	222	216	129	44	4	T	29	--	1
19..	169	67	30	45	16	2	27	--	1
20..	149	40	16	41	7	1	24	--	1
21..	125	31	10	37	22	2	23	--	1
22..	109	24	7	36	28	3	22	--	1
23..	114	76	23	33	28	2	20	--	1
24..	422	--	170	34	28	3	20	--	1
25..	1160	730	S 2950	303	--	1400	18	--	1
26..	810	628	1370	995	--	6300	17	--	1
27..	454	360	441	503	--	2000	15	--	1
28..	326	152	134	233	140	A 90	16	--	1
29..	233	84	53	140	28	11	18	--	1
30..	190	41	21	104	28	8	20	--	1
31..	--	--	--	879	27	6	--	--	--
Total	13904	--	25767	3996	--	9862	2757	--	4286

Day	JULY			AUGUST			SEPTEMBER		
1..	29	40	B 3	8.5	48	1	10	53	1
2..	37	59	6	8.5	57	1	8.8	52	1
3..	41	58	6	7.8	65	1	6.8	51	1
4..	41	40	4	9.6	108	3	6.8	49	1
5..	29	24	2	10	126	3	7.2	35	1
6..	37	29	3	8.5	79	2	6.5	44	1
7..	81	662	S 160	7.5	46	1	5.5	44	1
8..	65	830	146	10	52	1	5.5	53	1
9..	47	435	55	11	78	2	4.9	48	1
10..	51	236	32	9.6	91	2	4.6	28	T
11..	35	105	10	8.5	100	2	4.9	35	T
12..	24	53	3	7.5	102	2	8.8	50	1
13..	20	27	1	6.8	74	1	7.5	60	1
14..	17	8	T	6.2	53	1	8.4	82	S 13
15..	15	13	1	5.8	109	2	136	701	S 289
16..	15	15	1	5.5	117	2	116	826	S 318
17..	115	665	S 287	5.2	130	2	159	1540	S 711
18..	72	288	56	6.2	128	2	69	458	85
19..	34	143	13	7.8	94	2	37	208	21
20..	22	140	8	7.8	93	2	25	114	8
21..	17	72	3	7.2	107	2	20	106	6
22..	15	38	2	7.2	108	2	20	64	3
23..	14	26	1	6.2	102	2	20	95	5
24..	13	24	1	5.5	98	1	20	104	6
25..	11	22	1	4.9	99	1	16	112	5
26..	10	22	1	9.2	107	3	14	100	4
27..	9.2	22	1	9.2	117	3	13	81	3
28..	8.8	31	1	7.5	126	3	12	62	2
29..	8.5	42	1	6.5	102	2	11	63	2
30..	7.5	52	1	6.2	49	1	12	67	2
31..	7.8	55	1	7.8	52	1	--	--	--
Total	948.8	--	811	235.7	--	56	796.2	--	1495

Total discharge for year (cfs-days).. 36955.6
Total load for year (tons).. 54156

S Computed by subdividing day.
T Less than 0.50 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

WABASH RIVER BASIN--Continued

3-3408. BIG RACCOON CREEK NEAR FINCASTLE, IND.--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
July 7, 1965.......	1100			117	1180		35	49	69	87	98	100	--					SBWC
Sept. 15...........	0600			233	1070		55	75	87	96	98	99	100					SBWC
Sept. 15...........	0600			233	1070		10	26	53	86	93	93	95	100				SBN

WABASH RIVER BASIN--Continued

3-3418.5. WABASH RIVER NEAR SULLIVAN, IND.

LOCATION.--At intake line to Ohio River Valley Water Sanitation Commission (ORSANCO) monitor at Breed Generating Plant of the Indiana-Michigan Electric Company near Sullivan, Sullivan County.
DRAINAGE AREA.--12,600 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1963 to October 1964 (discontinued).
Water temperatures: July 1963 to October 1964 (discontinued).
EXTREMES, July 1963 to October 1964.--Specific conductance: Maximum daily, 817 micromhos Jan. 3, 1964; minimum daily, 263 micromhos Apr. 25, 1964.
Water temperatures: Maximum, 85°F July 25, 28, 29, Aug. 3, 4, 1964; minimum, not determined.
REMARKS.--Daily samples collected for month of October and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for the month, (2) minimum daily specific conductance for the month, and (3) maximum daily specific conductance for the week. No samples available Oct. 17-27. No discharge records available. This station was moved to Hutsonville, Illinois as of November 1964.

Chemical analyses, in parts per million, October 1964

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 2, 1964.						64	25				221	0	84	22	0.3	3.4		355	263	82		579	8.0	
Oct. 12......						--	--				--	--	90	--	--	--	0.66	--	--	--		624	7.4	0.1
Oct. 31......						80	28				266	0	84	36	.3	3.4		414	315	96		680	7.5	

Temperature (°F) of water, October 1964

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October.......	64	64	66	62	64	63	60	60	59	59	59	56	56	60	60	60	--	--	--	--	--	--	--	--	--	--	--	59	--	--	59	--

WABASH RIVER BASIN--Continued

3-3419.1. WABASH RIVER AT HUTSONVILLE, ILL.

LOCATION.--At intake line to Ohio River Valley Water Sanitation Commission (ORSANCO) monitor station at Central Illinois Public Service Company at Hutsonville, Crawford County.
DRAINAGE AREA.--12,600 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: November 1964 to September 1965.
Water temperatures: November 1964 to September 1965.
EXTREMES, November 1964 to September 1965.
Specific conductance: Maximum daily, 784 micromhos Jan. 24; minimum daily, 287 micromhos Feb. 10.
Water temperatures: Maximum, 88°F Aug. 19; minimum, 34°F Jan. 29, 30, Feb. 2.
REMARKS.--Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, and (3) maximum daily specific conductance for each 10-day period. This station was moved from Sullivan, Indiana. No discharge records available.

Chemical analyses, in parts per million, November 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Nov. 15, 1964.						--	--				--	--	89	--	--	--	0.74	--	--	--		669	7.6		0.1
Nov. 18.......						71	26				254	0	88	22	0.3	0.6	--	406	284	76		624	7.5		--
Nov. 29.......						71	26				257	0	81	42	.3	2.0	--	418	284	74		679	7.4		--
Dec. 1........						77	29				262	0	95	23	.3	2.1	--	401	311	96		643	8.1		--
Dec. 10.......						--	--				--	--	98	--	--	--	1.3	--	--	--		690	8.0		.1
Dec. 13.......						--	--				--	--	97	--	--	--	1.2	--	--	--		730	8.0		.1
Dec. 26.......						89	31				288	0	109	40	.4	4.5	--	489	350	114		770	7.6		--
Jan. 1, 1965..						--	--				--	--	106	--	--	--	.57	--	--	--		709	7.5		.1
Jan. 20.......						--	--				--	--	124	--	--	--	.45	--	--	--		697	7.6		.1
Jan. 24.......						94	32				260	0	130	34	.3	18	--	508	366	153		784	7.5		--
Jan. 26.......						66	24				173	0	86	17	.3	3.8	--	331	263	121		534	7.8		--
Feb. 8........						85	26				206	0	112	33	.2	29	--	463	319	150		667	7.6		--
Feb. 10.......						39	8.8				110	0	36	10	.2	5.9	--	201	134	44		287	7.0		--
Feb. 20.......						--	--				--	--	79	--	--	--	.54	--	--	--		518	7.9		.1
Feb. 28.......						--	--				--	--	103	--	--	--	.50	--	--	--		658	8.3		.1
Mar. 1........						--	--				--	--	100	--	--	--	.21	--	--	--		592	7.9		.0
Mar. 10.......						55	17				134	0	67	15	.2	24	--	292	207	97		431	8.2		--
Mar. 16.......						--	--				--	--	92	--	--	--	.34	--	--	--		568	7.7		.1
Mar. 29.......						79	27				222	0	99	20	.2	13	--	395	308	126		617	7.5		--

Apr. 1, 1965..						--	--				--	--	94	--	--	--	.43	--	--	--		567	8.1		.1
Apr. 8........						47	17				140	0	52	9.0	.3	18	--	241	187	72		377	6.8		--
Apr. 20.......						--	--				--	--	76	--	--	--	.38	--	--	--		493	7.6		.1
Apr. 24.......						79	29				225	0	88	19	.2	15	--	388	316	132		584	7.2		--
May 6.........						--	--				--	--	88	--	--	--	.38	--	--	--		566	7.5		.1
May 20........						--	--				--	--	97	--	--	--	.42	--	--	--		604	7.5		.1
May 21........						75	30				250	0	93	18	.3	12	--	390	311	106		611	7.6		--
May 28........						44	18				148	0	50	10	.3	8.3	--	236	184	63		386	8.1		--
June 4,.......						58	16				166	0	50	14	.3	16	--	276	211	74		431	8.1		--
June 8........						--	--				--	--	68	--	--	--	.51	--	--	--		567	8.3		.1
June 14.......						--	--				--	--	72	--	--	--	.51	--	--	--		569	7.7		.1
June 26.......						67	29				228	0	85	22	.3	7.0	--	372	286	99		576	8.0		--
July 8........						--	--				--	--	79	--	--	--	.53	--	--	--		548	7.2		.0
July 15.......						71	26				234	0	79	20	.3	9.6	--	351	284	92		573	7.4		--
July 21.......						46	16				156	0	51	11	.2	7.7	--	239	181	53		395	7.2		--
July 29.......						--	--				--	--	74	--	--	--	.53	--	--	--		555	8.0		.0
Aug. 1........						50	26				186	0	83	20	.3	1.4	--	314	232	80		501	8.2		--
Aug. 7........						--	--				--	--	91	--	--	--	.42	--	--	--		582	8.2		.0
Aug. 12.......						60	29				234	0	91	24	.4	.7	--	354	269	76		595	8.2		--
Aug. 21.......						--	--				--	--	93	--	--	--	.44	--	--	--		589	8.4		.0
Sept. 5.......						62	27				224	0	89	22	.3	4.9	--	348	266	82		590	8.0		--
Sept. 16......						--	--				--	--	86	--	--	--	.38	--	--	--		584	8.4		.1
Sept. 19......						43	16				154	0	44	8.0	.3	6.7	--	214	173	47		373	7.3		--
Sept. 30......						--	--				--	--	76	--	--	--	.61	--	--	--		585	7.5		.0

WABASH RIVER BASIN--Continued

3-3419.1. WABASH RIVER AT HUTSONVILLE, ILL.--Continued

Specific conductance (micromhos at 25°C), November 1964 to September 1965

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	--	--	643	709	564	592	567	496	505	542	501	568
2	--	--	659	685	577	506	558	489	532	524	518	566
3	--	--	646	690	593	510	500	515	561	424	556	583
4	--	--	644	538	599	526	517	532	431	500	566	574
5	--	--	660	573	616	524	532	551	448	503	576	590
6	--	--	679	615	632	540	547	566	498	532	562	567
7	--	--	675	605	650	487	386	540	533	538	582	577
8	--	--	675	--	667	470	377	506	561	548	565	572
9	--	659	683	605	665	455	416	493	532	531	559	573
10	--	663	690	631	287	431	430	540	555	431	558	568
11	--	656	704	642	449	451	429	567	532	497	575	580
12	--	665	708	636	450	451	415	574	565	514	595	564
13	--	668	730	653	483	478	402	583	568	516	589	571
14	--	663	717	656	424	566	408	581	569	539	579	582
15	--	669	706	665	405	521	397	577	546	573	572	577
16	--	650	704	673	424	562	423	577	532	524	559	584
17	--	649	714	680	438	544	428	563	535	506	565	542
18	--	624	704	684	460	564	444	585	539	509	578	394
19	--	646	699	691	503	560	457	590	554	422	575	373
20	--	644	688	697	518	547	493	604	551	399	590	438
21	--	643	699	712	533	554	527	611	549	395	589	450
22	--	640	711	739	546	527	550	610	554	477	589	476
23	--	649	725	763	568	525	570	596	560	521	574	518
24	--	650	725	784	596	559	584	593	550	507	569	530
25	--	658	752	671	602	573	581	593	558	534	581	500
26	--	670	770	534	607	582	488	599	576	531	570	482
27	--	664	745	576	628	592	425	601	576	537	579	476
28	--	659	708	537	658	606	460	386	560	544	574	508
29	--	679	720	535	--	617	470	419	547	555	578	571
30	--	636	730	575	--	617	474	458	557	520	572	585
31	--	--	717	584	--	603	--	488	--	499	568	--
AVERAGE	--	554	700	544	540	535	475	547	541	506	569	534

WABASH RIVER BASIN--Continued

3-3419.1. WABASH RIVER AT HUTSONVILLE, ILL.--Continued

Temperature (°F) of water, November 1964 to September 1965

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
November	--	--	--	--	--	--	--	--	57	57	57	60	57	57	58	61	60	60	56	50	45	41	40	39	42	41	42	49	46	42	--	--
December	42	42	42	45	46	42	43	43	44	46	47	50	52	48	46	43	47	39	40	39	40	40	43	49	47	45	43	40	41	45	46	44
January	48	51	47	46	46	43	45	--	51	48	47	46	46	44	43	39	37	40	39	40	41	43	44	44	37	37	36	35	34	34	36	42
February	37	34	38	39	40	40	42	44	42	50	40	41	40	--	40	41	42	41	42	42	44	41	41	40	38	36	40	44	--	--	--	41
March	42	44	42	40	38	39	38	38	39	39	39	39	40	39	39	40	43	45	44	41	38	39	42	42	42	40	40	42	44	44	47	41
April	47	46	46	45	47	49	52	56	57	54	54	57	54	55	55	53	54	56	55	55	57	60	62	64	64	62	57	56	58	56	--	55
May	60	62	65	68	69	70	68	69	70	71	71	72	70	71	74	74	72	74	74	74	73	74	75	76	77	76	75	72	68	68	68	71
June	68	69	71	70	70	72	73	74	75	76	77	80	80	79	76	75	74	73	75	75	75	74	78	77	78	76	80	80	80	80	--	75
July	78	80	76	78	80	80	80	78	77	77	81	80	82	82	82	81	82	81	77	79	80	81	83	84	86	85	86	84	85	82	82	81
August	79	78	76	78	80	84	85	83	82	79	80	80	81	83	85	86	86	87	88	85	84	82	82	81	81	81	82	81	78	78	77	82
September	77	78	76	78	77	77	78	80	82	82	78	76	74	75	75	75	73	72	73	74	76	76	75	74	69	68	67	67	67	69	--	75

WABASH RIVER BASIN--Continued

3-3420. WABASH RIVER AT RIVERTON, IND.

LOCATION.--Temperature recorder at gaging station on left bank at Illinois Central Railroad bridge at Riverton, Sullivan County, 0.6 mile downstream from Turtle Creek, and at mile 162.0.
DRAINAGE AREA.--13,100 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: July 1954 to September 1961, October 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 85°F July 26-28; minimum, freezing point Feb. 5, 6.
EXTREMES, 1954-61, 1962-65.--Water temperatures: Maximum, 91°F July 20, Aug. 29, 1954; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	69	69	69	68	67	64	63	62	61	61	59	60	62	63	63	64	64	64	63	61	58	58	58	58	59	59	59	61	62	62	60	62
Minimum	68	69	67	67	64	62	62	61	60	59	58	59	60	62	63	63	63	63	61	58	58	58	58	57	58	59	59	59	61	60	59	61
November																																
Maximum	60	61	62	62	61	61	60	60	60	60	60	61	61	58	58	59	59	58	56	53	51	49	46	45	45	45	45	47	47	45	--	55
Minimum	60	60	61	61	61	60	60	60	60	59	59	60	58	57	57	58	58	56	53	51	49	46	45	45	45	45	44	45	45	44	--	54
December																																
Maximum	44	42	42	42	42	41	39	39	39	39	41	43	43	43	42	41	41	41	40	39	39	38	39	42	42	41	41	40	40	41	41	41
Minimum	42	42	42	42	41	39	39	39	39	39	39	41	43	42	41	41	41	40	39	38	38	38	38	39	41	41	40	40	40	40	41	40
January																																
Maximum	41	42	43	43	43	42	42	43	43	43	43	42	42	41	41	41	40	38	38	36	36	36	38	38	38	37	36	35	35	35	34	40
Minimum	41	41	42	43	42	42	42	42	43	43	42	42	41	41	41	40	38	38	36	36	36	36	36	38	37	36	35	35	35	34	34	39
February																																
Maximum	34	33	33	33	33	32	33	34	34	36	36	36	36	36	36	36	36	36	36	36	37	37	37	37	37	36	35	35	--	--	--	35
Minimum	33	33	33	33	32	32	33	33	34	34	36	36	36	36	36	36	36	36	36	36	36	37	37	37	36	35	34	34	--	--	--	35
March																																
Maximum	35	36	36	36	36	36	36	35	35	35	35	37	37	37	37	38	39	40	40	40	40	39	38	38	38	38	38	38	38	39	40	37
Minimum	35	35	36	36	36	36	35	35	35	35	35	35	37	37	37	37	38	39	40	40	39	38	38	38	38	38	38	38	38	38	39	37
April																																
Maximum	41	43	43	43	43	44	46	48	50	50	50	51	51	52	52	52	52	52	52	52	52	52	53	54	56	56	56	56	54	55	--	50
Minimum	40	41	43	43	43	43	44	46	48	50	50	50	51	51	52	52	52	52	52	52	52	52	52	53	54	56	56	54	53	53	--	50
May																																
Maximum	55	56	58	58	58	59	61	61	61	61	62	63	64	65	65	65	66	68	68	68	68	70	71	72	74	75	77	77	76	75	74	66
Minimum	54	55	56	58	58	58	59	61	61	61	61	62	64	63	65	65	65	67	68	68	68	69	70	71	73	74	76	76	75	74	73	65
June																																
Maximum	73	72	73	74	74	74	74	74	74	75	76	76	76	76	76	76	76	76	76	76	76	76	77	78	78	78	79	80	81	82	--	76
Minimum	72	72	72	73	74	74	74	74	74	74	74	76	76	76	76	76	76	76	76	76	76	76	76	77	78	78	78	79	80	81	--	76
July																																
Maximum	82	82	81	81	80	80	80	80	80	81	81	80	80	80	80	81	81	82	82	82	81	81	81	82	83	85	85	85	84	84	83	82
Minimum	82	81	81	80	80	78	80	80	80	80	80	80	80	80	80	80	81	81	82	81	81	81	81	81	82	83	85	84	84	83	83	81
August																																
Maximum	83	82	81	80	79	81	81	81	81	81	80	80	79	80	81	82	82	82	82	82	82	82	82	81	81	80	80	80	80	79	78	81
Minimum	82	81	80	79	79	79	81	81	81	80	80	79	79	79	80	81	82	82	82	82	82	82	81	81	80	80	80	80	79	78	78	80
September																																
Maximum	78	77	77	77	77	77	77	77	77	77	77	75	74	74	74	74	74	74	73	73	73	73	74	74	74	72	70	69	68	68	--	74
Minimum	77	77	77	77	77	77	77	77	76	77	75	74	74	74	74	74	74	73	73	73	73	73	73	74	72	70	69	68	68	68	--	74

WABASH RIVER BASIN--Continued

3-3485. WHITE RIVER NEAR NOBLESVILLE, IND.

LOCATION.--Temperature recorder at gaging station on downstream side of center pier of highway bridge, 1 mile west of Strawtown, 7 miles northeast of Noblesville, Hamilton County, and 9.5 miles upstream from Cicero Creek.
DRAINAGE AREA.--814 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1953 to July 1957, October 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 83°F July 24, 25, Aug. 16; minimum, freezing point on many days during December to February.
EXTREMES, 1953-57 1962-65.--Water temperatures: Maximum, 88°F July 14, 1954; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	62	63	62	61	59	58	55	54	54	52	51	50	52	54	54	54	56	56	54	52	50	50	49	49	50	51	52	53	54	54	52	54
Minimum	58	61	59	59	57	54	53	53	52	50	50	49	50	52	53	52	54	54	52	50	49	49	48	47	48	50	51	51	53	51	50	52
November																																
Maximum	52	52	52	52	53	53	50	50	50	50	51	52	52	50	49	52	52	51	48	44	40	36	34	34	36	38	40	43	43	38	--	47
Minimum	50	51	52	52	52	50	48	49	48	49	50	51	50	48	48	49	51	48	44	40	36	34	34	34	34	36	38	40	38	35	--	45
December																																
Maximum	35	33	34	34	34	34	34	33	33	33	37	40	40	39	36	33	34	33	32	32	32	32	34	40	40	40	39	37	37	41	41	36
Minimum	32	33	33	34	34	34	32	32	33	33	33	37	39	36	33	32	33	32	32	32	32	32	32	34	40	39	37	36	37	37	39	34
January																																
Maximum	39	41	41	39	37	38	40	45	45	43	39	37	37	35	33	33	33	33	33	33	33	32	32	34	34	37	37	36	33	32	32	36
Minimum	39	39	39	37	37	37	38	41	43	39	37	36	35	32	33	33	33	33	33	33	32	32	32	32	34	34	36	33	32	32	32	35
February																																
Maximum	32	34	33	32	32	32	32	33	35	43	43	43	40	39	38	39	40	40	40	40	40	39	35	34	33	33	33	35	--	--	--	36
Minimum	32	32	32	32	32	32	32	32	33	35	43	40	39	37	37	38	39	39	40	38	39	35	34	33	33	33	32	32	--	--	--	35
March																																
Maximum	37	36	36	36	36	35	36	37	37	37	38	39	40	40	40	43	43	43	40	37	36	39	39	39	39	37	39	41	43	44	44	39
Minimum	35	36	36	36	35	35	35	36	37	36	37	38	39	39	39	40	42	40	37	35	35	35	39	39	37	36	36	39	41	41	41	37
April																																
Maximum	44	44	44	44	44	50	52	52	51	50	52	52	51	50	49	48	50	50	52	56	60	63	63	63	57	55	52	52	56	60	--	52
Minimum	43	43	42	43	44	44	50	51	49	50	50	51	49	49	48	48	48	49	50	52	56	60	62	57	55	52	52	52	52	55	--	50
May																																
Maximum	64	67	68	70	70	70	70	72	72	70	69	70	70	70	70	70	71	71	71	71	72	74	74	75	74	73	73	70	66	66	69	70
Minimum	60	63	64	66	67	68	66	69	70	68	66	66	66	66	67	68	68	68	68	68	67	70	72	73	71	70	69	66	63	62	64	67
June																																
Maximum	70	70	68	70	73	73	72	74	75	76	76	77	77	75	74	72	72	72	74	74	76	76	76	76	76	76	78	78	78	78	--	74
Minimum	67	68	66	65	68	72	71	71	74	74	74	75	73	72	70	69	69	68	69	71	72	74	74	73	72	71	74	76	76	76	--	71
July																																
Maximum	78	78	77	77	78	78	78	78	79	77	77	78	79	79	78	78	77	76	77	78	76	78	80	83	83	81	81	80	79	76	76	78
Minimum	75	74	73	74	76	76	76	74	76	75	75	75	75	77	75	74	74	75	74	74	73	75	78	79	80	78	79	78	75	72	73	75
August																																
Maximum	73	71	72	72	78	79	78	77	75	72	74	75	76	79	81	83	82	81	78	78	76	76	75	75	76	76	76	76	72	70	69	76
Minimum	71	68	68	70	72	76	77	75	72	69	70	72	73	76	78	80	80	78	76	74	73	73	73	72	74	74	74	72	68	69	68	73
September																																
Maximum	70	70	70	70	72	72	73	74	76	76	76	69	69	71	71	68	67	70	72	73	73	72	71	70	64	62	61	62	63	63	--	70
Minimum	68	68	67	69	70	70	71	72	74	74	69	67	67	69	67	66	64	67	70	72	72	71	69	64	61	60	60	60	61	63	--	67

WABASH RIVER BASIN--Continued

3-3490. WHITE RIVER AT NOBLESVILLE, IND.

LOCATION.--Temperature recorder at gaging station on right bank at downstream side of Logan Street Bridge in Noblesville, Hamilton County, 1.5 miles upstream from Cicero Creek, 3.5 miles below dam at Clare, and at mile 269.0.
DRAINAGE AREA.--837 square miles.
RECORDS AVAILABLE.--Water temperatures: Novemver 1952 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 87°F July 24, Aug. 15, 17; minimum, freezing point Dec. 6-8, Jan. 21-25.
EXTREMES, 1952-65.--Water temperatures: Maximum, 94°F Aug. 1, 1953; minimum, freezing point on many days during winter months.
REMARKS.--Flow regulated by powerplant above station.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	65	65	64	63	62	59	58	57	56	55	54	54	56	57	57	59	59	58	55	54	53	53	55	55	52	53	53	55	55	55	53	57
Minimum	61	63	60	60	58	56	54	55	54	52	50	50	53	53	54	56	55	55	53	51	50	51	52	51	50	50	52	53	54	50	50	54
November																																
Maximum	53	54	55	55	55	54	53	53	52	54	54	54	53	52	51	53	53	53	51	48	43	37	35	36	36	37	41	43	42	39	--	48
Minimum	51	52	54	53	54	51	52	51	49	51	52	53	52	49	49	50	50	51	48	43	37	34	34	35	36	35	37	41	39	36	--	46
December																																
Maximum	38	37	36	35	36	34	32	35	35	38	39	41	40	40	38	35	35	34	33	33	33	33	37	40	40	41	40	39	40	43	41	37
Minimum	36	35	34	33	34	32	32	32	33	34	38	39	40	38	35	34	34	33	33	33	33	33	33	37	36	40	38	37	39	40	38	35
January																																
Maximum	39	41	41	41	41	42	42	45	45	43	40	38	37	36	34	33	33	33	33	33	33	32	32	32	34	36	36	35	35	35	33	37
Minimum	39	39	40	38	38	37	40	41	43	40	38	36	36	33	33	33	33	33	33	33	32	32	32	32	32	34	35	33	33	33	33	35
February																																
Maximum	33	33	33	34	37	37	36	35	35	44	44	43	41	39	38	39	41	42	41	40	39	38	38	36	36	37	37	35	--	--	--	38
Minimum	33	33	33	33	33	35	34	33	33	35	43	41	39	37	37	38	39	39	40	39	38	35	35	33	33	33	33	33	--	--	--	36
March																																
Maximum	39	39	38	38	38	37	38	39	39	39	39	41	43	42	44	45	46	45	43	39	39	44	44	41	39	38	39	42	45	45	46	41
Minimum	33	38	38	38	37	37	37	38	39	38	38	39	40	41	41	41	44	43	39	36	37	37	41	39	38	37	36	39	42	43	43	39
April																																
Maximum	45	46	44	44	46	51	54	54	52	51	54	54	52	51	50	50	52	52	54	56	59	62	64	62	57	54	51	52	54	59	-	53
Minimum	44	43	43	44	44	45	51	52	50	50	50	52	51	50	50	49	49	51	51	53	56	59	61	57	54	51	50	51	51	54	--	51
May																																
Maximum	63	65	68	70	71	70	71	75	72	70	70	72	73	72	73	72	73	74	75	75	77	76	77	80	80	75	73	70	68	65	69	72
Minimum	59	62	64	65	68	68	66	69	70	68	66	66	67	67	68	68	68	68	70	69	69	72	71	72	75	71	70	66	63	62	63	67
June																																
Maximum	72	72	68	68	74	74	74	78	78	80	81	80	78	77	77	75	75	76	76	76	78	80	80	79	79	78	80	80	80	81	--	77
Minimum	66	68	66	65	67	72	70	70	73	73	75	74	71	70	70	68	69	69	69	69	71	75	76	74	72	72	72	75	78	77	--	71
July																																
Maximum	81	81	79	79	81	80	82	83	83	81	80	81	83	83	83	83	80	79	80	80	79	80	85	87	85	83	83	83	82	79	79	82
Minimum	75	74	74	73	74	74	80	76	78	78	73	73	77	80	80	75	75	74	74	75	74	74	80	83	78	77	79	79	78	75	73	76
August																																
Maximum	74	73	73	74	80	83	82	80	77	77	78	80	82	86	87	85	87	86	84	84	80	77	77	77	80	79	79	80	74	73	72	79
Minimum	71	68	68	68	71	79	80	76	73	73	74	74	76	80	83	80	83	82	83	76	74	73	72	73	76	73	78	74	68	69	69	75
September																																
Maximum	74	74	74	74	75	75	76	77	79	82	80	72	72	74	74	70	70	75	74	79	79	77	73	72	66	63	63	64	65	66	--	73
Minimum	72	59	58	73	70	70	71	74	75	79	72	69	70	72	70	66	65	69	71	71	76	73	70	66	62	60	59	59	61	63	--	68

WABASH RIVER BASIN--Continued

3-3510. WHITE RIVER NEAR NORA, IND.

LOCATION.--Temperature recorder at gaging station on downstream side of center pier of bridge on State Highway 100, 2 miles east of Nora, Marion County, and 14 miles upstream from Fall Creek.
DRAINAGE AREA.--1,200 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1954 to May 1960, October 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 82°F July 24-27; minimum, freezing point on several days during December to February.
EXTREMES, 1954-60, 1962-65.--Water temperatures: Maximum, 89°F July 14, 1954; minimum, freezing point on many days during winter months.
REMARKS.--Flow regulated by powerplant above station.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	63	63	63	63	63	63	61	59	58	58	56	55	54	54	54	54	55	54	54	54	54	53	52	51	51	51	51	52	52	53	53	56
Minimum	63	63	63	63	63	61	59	58	58	56	55	54	54	54	54	54	54	54	54	54	53	52	51	51	51	51	51	51	52	52	52	55
November																																
Maximum	52	53	54	54	54	54	54	53	53	53	53	53	53	53	52	52	53	53	52	51	48	45	42	40	40	39	39	40	41	41	--	49
Minimum	52	52	53	54	54	54	53	53	53	52	52	52	53	52	52	52	52	51	51	48	45	42	40	40	39	39	39	39	40	38	--	48
December																																
Maximum	38	36	36	35	35	35	35	34	34	34	34	35	37	37	37	35	34	34	33	33	32	32	32	34	35	35	35	35	35	36	36	35
Minimum	36	36	35	35	35	34	34	34	34	33	33	33	34	37	35	33	33	33	33	32	32	32	32	32	34	34	35	35	35	35	36	34
January																																
Maximum	36	36	36	36	35	35	35	38	38	38	37	35	34	34	33	33	33	33	33	34	34	34	33	32	32	33	33	33	33	33	33	34
Minimum	36	36	36	35	35	34	34	34	38	37	35	34	34	32	32	32	33	33	33	33	34	33	32	32	32	32	33	33	33	33	33	34
February																																
Maximum	33	34	34	34	34	34	34	34	36	39	39	40	39	37	36	36	37	38	38	38	38	38	36	36	35	34	34	34	--	--	--	36
Minimum	32	32	34	33	33	34	34	33	32	36	39	39	37	36	36	36	36	37	38	38	38	36	36	34	34	34	32	32	--	--	--	35
March																																
Maximum	34	35	35	35	35	35	36	36	36	36	37	39	40	40	40	41	42	42	42	40	39	40	42	42	42	41	40	42	43	44	44	39
Minimum	34	34	35	35	35	35	35	36	36	36	36	37	39	40	40	40	41	42	40	39	39	39	40	42	41	40	39	39	42	43	44	38
April																																
Maximum	45	46	46	46	46	50	51	51	51	51	53	53	53	53	52	52	53	54	54	54	56	58	60	60	58	57	54	53	54	56	--	53
Minimum	44	45	46	46	46	46	50	51	51	51	51	53	52	52	51	51	52	53	53	53	54	56	58	58	57	54	53	53	53	54	--	52
May																																
Maximum	60	62	63	64	65	66	68	68	68	68	69	69	69	69	69	70	71	71	71	71	71	73	74	75	75	75	75	75	72	70	70	70
Minimum	56	60	62	63	64	65	66	68	68	68	68	69	69	69	69	69	70	70	70	71	71	71	73	74	75	75	75	72	70	69	69	69
June																																
Maximum	71	70	70	70	70	70	70	72	73	73	74	76	76	74	73	72	72	72	74	74	74	76	76	76	76	76	76	76	76	76	--	73
Minimum	68	69	70	68	69	69	70	70	72	73	73	73	74	73	72	72	72	72	72	73	74	74	76	74	74	75	74	76	76	76	--	72
July																																
Maximum	78	78	78	78	79	79	79	79	79	79	79	79	80	79	79	78	78	78	76	76	76	78	80	82	82	82	82	81	80	78	76	79
Minimum	76	78	77	77	78	79	79	78	79	79	79	79	79	79	78	78	78	76	76	76	76	76	78	80	82	82	81	80	78	76	76	78
August																																
Maximum	76	74	72	73	75	76	76	76	76	74	74	74	75	77	78	79	79	79	79	78	76	75	75	75	74	74	74	74	74	70	70	75
Minimum	74	72	72	72	73	75	76	76	74	73	73	74	74	75	77	78	79	79	78	76	75	75	75	73	73	74	74	74	70	70	70	74
September																																
Maximum	70	70	69	70	71	71	72	73	74	74	74	72	70	71	71	71	69	72	72	73	73	73	72	72	69	66	65	64	65	65	--	70
Minimum	70	69	69	69	70	71	71	72	73	74	72	70	70	70	71	69	68	68	72	72	73	72	72	69	66	65	64	64	64	65	--	69

WABASH RIVER BASIN--Continued

3-3655. EAST FORK WHITE RIVER AT SEYMOUR, IND.

LOCATION.--Temperature recorder at gaging station on left bank, 1,700 feet downstream from highway bridge, 1 mile north of Seymour, Jackson County, 9.6 miles downstream from Sand Creek, and at mile 219.2.
DRAINAGE AREA.--2,333 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1954 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 86°F July 24, 25; minimum, freezing point Jan. 17-22.
EXTREMES, 1954-65.--Water temperatures: Maximum, 86°F July 24, 25, 1965; minimum, freezing point on many days during winter months. Maximum temperature known, 90°F July 19, 1954.
REMARKS.--Regulation at low flow by pumping plant 1,200 feet upstream from recorder.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	64	66	66	65	66	62	60	58	58	56	55	54	56	57	58	59	60	59	58	56	55	54	54	52	52	52	53	54	55	55	54	58
Minimum	62	64	64	64	61	59	58	58	56	54	53	53	54	56	56	57	58	58	56	54	53	53	52	51	51	51	52	53	54	54	53	56
November																																
Maximum	54	54	55	55	55	55	53	52	52	52	53	54	54	54	53	53	54	54	52	49	46	42	39	38	39	40	41	43	43	42	--	49
Minimum	53	53	54	54	55	53	52	51	51	52	52	53	54	53	52	52	53	52	49	46	42	39	38	38	38	39	40	41	42	39	--	48
December																																
Maximum	39	37	37	38	38	38	36	36	36	36	38	40	41	41	39	37	36	36	34	33	33	33	36	41	42	42	40	39	38	41	41	38
Minimum	37	37	37	37	38	36	36	36	36	36	36	38	40	39	37	36	36	34	33	33	33	33	33	36	41	40	39	38	38	38	41	37
January																																
Maximum	41	41	41	40	38	37	38	42	42	42	40	38	37	37	35	34	33	32	32	32	32	33	33	35	34	36	36	36	35	34	34	36
Minimum	41	41	40	38	37	37	37	38	42	40	38	37	37	35	34	33	32	32	32	32	32	32	33	33	34	34	36	35	33	33	34	36
February																																
Maximum	34	34	34	34	34	34	34	34	36	46	47	47	44	42	40	40	42	43	43	43	43	41	40	39	38	36	38	40	--	--	--	39
Minimum	34	34	34	34	34	34	34	33	33	36	46	44	42	40	39	39	40	42	43	42	41	39	39	38	35	34	36	38	--	--	--	38
March																																
Maximum	42	43	43	43	42	41	41	42	42	42	42	43	44	44	45	46	47	47	47	44	43	44	45	44	43	42	41	43	44	45	47	44
Minimum	40	42	43	42	41	40	40	41	42	42	42	42	43	44	44	45	46	47	44	43	41	41	44	43	42	41	40	41	43	43	45	42
April																																
Maximum	47	47	47	47	48	52	55	57	57	55	55	55	56	56	55	54	55	56	57	58	60	63	65	65	64	61	57	55	56	58	--	56
Minimum	46	47	46	46	47	48	52	55	55	53	53	55	55	55	54	53	53	55	56	57	58	60	63	64	61	57	55	54	54	56	--	54
May																																
Maximum	62	65	66	67	68	68	70	72	72	71	71	71	72	72	71	70	72	72	72	71	71	73	75	76	77	76	76	75	71	70	71	71
Minimum	58	62	64	66	67	67	68	69	70	70	68	68	68	69	70	69	69	70	69	70	67	70	72	74	75	74	74	71	68	68	68	69
June																																
Maximum	71	73	73	74	76	76	75	77	77	77	78	79	78	76	75	74	74	74	76	76	76	78	78	77	77	77	79	80	79	79	--	76
Minimum	70	70	72	70	73	75	73	74	75	75	75	76	75	73	72	70	71	70	70	72	73	74	75	75	72	72	75	77	77	77	--	73
July																																
Maximum	79	79	78	79	82	82	81	81	80	80	79	79	79	81	81	80	79	79	80	79	79	79	83	86	86	84	84	82	81	78	77	81
Minimum	75	74	74	76	78	79	78	77	78	77	77	76	76	78	79	77	77	77	77	77	76	77	79	81	83	81	82	79	76	74	74	77
August																																
Maximum	74	73	74	74	78	80	79	76	75	75	77	78	79	80	82	85	85	84	83	80	79	80	79	78	79	79	78	77	73	74	73	78
Minimum	72	70	69	71	73	76	76	75	73	72	72	72	74	76	79	80	81	81	80	76	75	76	76	74	75	76	76	73	69	70	71	74
September																																
Maximum	72	73	72	71	74	75	76	76	78	78	77	71	71	72	72	71	70	73	74	76	76	76	75	73	66	65	64	65	67	66	--	72
Minimum	70	68	69	71	71	72	72	73	74	75	71	69	69	70	71	69	68	70	72	74	75	75	73	66	64	63	63	61	62	65	--	70

WABASH RIVER BASIN--Continued

3-3655. EAST FORK WHITE RIVER AT SEYMOUR, IND.--Continued

Periodic determinations of suspended sediment discharge, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Oct. 2, 1964	1145			212	5	2.9												
Oct. 2	1710			199	2	1.1												
Nov. 20	0815			287	4	3.1												
Jan. 23, 1965	0910			640	6	10												
Feb. 8	1630			3940	431	4580												
Feb. 18	1810			3580	60	580												
Mar. 16	1430			2700	64	466												
Mar. 19	1445			2940	31	246												
Apr. 13	1200			7190	151	2930												
Apr. 15	1430			5300	112	1600												
May 10	1605			1860	48	241												
May 20	1600			1200	49	159												
June 17	1500			460	51	63												
July 15	1500			800	44	95												
Aug. 12	1715			468	19	24												
Sept. 24	1000			788	66	140												

WABASH RIVER BASIN--Continued

3-3740. WHITE RIVER AT PETERSBURG, IND.

LOCATION.--Temperature recorder at gaging station on left bank, 300 feet downstream from bridge on State Highway 61, 0.4 mile upstream from Prides Creek, 1 mile north of Petersburg, Pike County, and at mile 47.7.
DRAINAGE AREA.--11,139 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1964 to September 1965.
EXTREMES, June 1964 to September 1965.--Water temperatures: Maximum, 87°F Aug. 4, 1964; minimum, freezing point Dec. 22, 1964, Feb. 7, 1965.

Temperature (°F) of water June 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
June																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	80	79	75	76	76	77	78	78	79	80	81	82	82	82	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	78	75	74	74	75	75	77	78	78	78	79	80	81	80	--	--
July																																
Maximum	81	82	82	82	80	80	78	78	76	76	77	77	77	76	78	77	76	76	76	79	79	81	84	85	84	84	84	83	84	82	82	80
Minimum	79	80	80	80	79	77	76	76	75	75	76	77	75	75	75	76	75	76	75	76	77	79	80	82	82	81	82	82	82	80	80	78
August																																
Maximum	83	84	86	87	85	84	83	82	81	82	82	78	74	74	75	76	77	78	79	79	78	76	77	77	76	76	78	79	81	82	81	80
Minimum	80	81	83	84	82	81	81	80	77	77	78	73	71	70	71	71	72	74	75	75	76	75	73	73	75	74	74	76	76	78	79	76
September																																
Maximum	80	80	80	80	79	79	80	80	80	80	78	--	--	--	--	--	--	--	--	--	--	--	--	--	69	67	66	63	--	--	--	--
Minimum	77	76	76	76	76	74	76	76	76	76	72	--	--	--	--	--	--	--	--	--	--	--	--	--	65	65	63	61	--	--	--	--
October																																
Maximum	--	68	67	67	65	--	--	60	58	--	--	--	59	60	62	62	62	61	58	56	55	--	--	--	--	--	--	--	--	58	56	--
Minimum	--	62	62	63	59	--	--	57	54	--	--	--	54	56	58	57	57	58	55	52	51	--	--	--	--	--	--	--	--	54	52	--
November																																
Maximum	58	59	60	58	60	58	56	57	57	58	58	59	58	56	58	60	58	56	--	--	--	--	--	42	43	44	46	47	46	--	--	55
Minimum	54	56	56	55	56	54	54	54	53	53	54	56	54	52	54	57	56	53	--	--	--	--	--	39	41	42	42	46	41	--	--	51
December																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	33	38	43	43	42	39	39	40	43	43	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	32	33	38	42	39	38	38	38	40	42	--
January																																
Maximum	42	43	42	41	41	41	43	45	45	44	42	40	40	39	38	36	--	--	--	--	33	35	37	37	38	38	38	37	--	--	--	--
Minimum	42	42	41	40	40	41	41	43	44	42	40	40	39	38	36	34	--	--	--	--	33	33	35	37	37	38	37	36	--	--	--	--
February																																
Maximum	--	--	--	--	--	--	33	33	38	44	45	45	45	44	42	42	41	41	41	41	41	41	40	39	38	36	36	37	--	--	--	40
Minimum	--	--	--	--	--	--	32	33	33	38	43	45	44	42	42	41	41	40	41	41	41	40	39	38	36	35	35	36	--	--	--	39
March																																
Maximum	37	39	40	40	40	40	40	39	39	39	39	39	39	40	40	41	43	43	43	43	42	42	42	42	42	42	40	40	40	41	42	41
Minimum	37	37	39	40	40	40	39	39	39	39	39	39	39	39	40	40	41	43	43	42	42	42	42	42	42	40	40	40	40	40	41	40

April																																
Maximum	43	44	44	44	46	48	50	52	52	52	52	53	53	53	53	53	53	52	52	53	53	56	57	59	60	60	59	57	55	54	--	52
Minimum	42	43	44	44	44	46	48	50	52	52	52	52	53	53	53	53	52	52	52	52	53	53	56	56	59	59	57	55	54	54	--	52
May																																
Maximum	54	58	60	62	64	65	66	68	68	68	68	68	69	70	70	70	70	70	70	70	70	72	73	74	74	74	73	73	70	69	70	68
Minimum	54	54	58	60	62	64	65	66	68	68	68	68	68	68	69	68	68	70	68	69	68	69	71	71	72	72	72	70	68	67	68	67
June																																
Maximum	70	71	72	72	74	74	72	73	73	74	74	76	76	76	74	72	72	73	74	74	75	75	74	75	75	76	78	78	78	78	--	74
Minimum	70	69	70	70	72	72	71	71	72	72	72	74	74	73	72	70	71	70	71	72	72	73	72	72	72	72	74	75	76	73	--	72
July																																
Maximum	75	75	74	74	75	76	76	76	76	76	75	76	77	79	80	78	78	78	78	79	78	79	81	83	83	82	81	80	79	78	76	78
Minimum	73	74	74	74	73	75	75	74	76	74	74	74	75	77	78	77	77	77	77	77	77	77	78	80	81	80	79	78	77	74	74	76
August																																
Maximum	74	74	74	74	78	78	78	74	75	75	76	76	78	80	82	84	82	82	82	79	78	79	78	78	78	77	74	74	71	70	71	77
Minimum	72	70	70	72	72	75	74	73	74	73	73	72	74	76	78	79	80	79	79	76	76	76	76	75	76	72	72	71	68	66	68	74
September																																
Maximum	70	70	68	67	70	71	72	73	75	74	74	66	66	68	68	66	66	67	68	70	70	70	68	67	64	62	62	62	63	63	--	68
Minimum	67	66	66	66	67	68	68	70	71	71	66	66	65	66	66	66	65	66	67	68	70	68	67	64	62	61	61	60	61	63	--	66

TRADEWATER RIVER BASIN

3-3830. TRADEWATER RIVER AT OLNEY, KY.

LOCATION.--At gaging station at highway bridge at Olney, Hopkins County, 1.1 miles upstream from Cave Creek, 5.1 miles downstream from Flynn Creek, and 9.5 miles northeast of Princeton.

DRAINAGE AREA.--255 square miles, of which about 9.0 square miles does not contribute directly to surface runoff.

RECORDS AVAILABLE.--Chemical analyses: October 1949 to August 1950, October 1951 to September 1965.
Water temperatures: October 1951 to September 1965.
Sediment records: October 1952 to September 1965.

EXTREMES, 1964-65.--Specific conductance: Maximum daily, 1,560 micromhos Nov. 28; minimum daily, 96 micromhos Apr. 1.
Water temperatures: Maximum, 81°F July 24, 25; minimum, freezing point Jan. 31 to Feb. 4.
Sediment concentrations: Maximum daily, 256 ppm June 9; minimum daily, 2 ppm on many days during October to December, May, June, and September.
Sediment loads: Maximum daily, 2,360 tons Mar. 30; minimum daily, less than 0.05 ton on many days during October, November, and June to September.

EXTREMES, 1951-65.--Specific conductance: Maximum daily, 2,040 micromhos Nov. 23, 1958; minimum daily, 51 micromhos Mar. 23, 1952.
Water temperatures: Maximum, 87°F July 26, 29, 1952; minimum, freezing point on many days during winter months.
Sediment concentrations (1952-65): Maximum daily, 764 ppm June 5, 1954; minimum daily, no flow on many days during most years.
Sediment loads (1952-65): Maximum daily, 5,100 tons Mar. 10, 1964; minimum daily, 0 tons on many days during most years.

REMARKS.--Values reported for iron and manganese are in solution when analyzed. Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) maximum daily turbidity for each month, and (4) a composite analysis of all daily samples for each month. Flow affected by ice Jan. 31 to Feb. 5.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Turbidity
																			Calcium, magnesium	Noncarbonate					
Oct. 1, 1964..	426	5.6	0.1	0.01	1.1						2	0	82	2.0				150	83	82	A0.0	205	6.2	6	--
Oct. 4........	293	9.9	7.4	.04	6.7						0	0	288	3.0				454	254	254	A1.4	597	4.3	5	--
Oct. 5........	--	--	--	--	--						--	--	--	--				--	--	--	--	--	--	--	80
Oct. 1-31.....	42.1	--	3.4	.00	5.8						--	--	--	--				348	--	--	.6	494	4.6	--	--
Nov. 28.......	136	17	21	.20	29						0	0	954	9.0				1420	880	880	A3.6	1560	4.0	4	10
Nov. 30.......	95	9.3	.2	.00	5.2						14	0	220	4.0				372	232	221	A.0	510	6.9	3	--
Nov. 1-30.....	17.8	--	5.1	.00	10						--	--	--	--				538	--	--	A1.0	700	4.7	--	--
Dec. 2........	63	13	14	.00	10						0	0	456	5.0				716	396	396	A2.3	851	4.4	3	--
Dec. 6........	--	--	--	--	--						--	--	--	--				--	--	--	--	--	--	--	25
Dec. 14.......	1610	5.6	.2	.11	.28						8	0	50	2.5				104	58	52	A.0	142	6.6	25	--
Dec. 1-31.....	643	--	.9	.00	3.4						--	--	--	--				258	--	--	A.2	381	5.3	--	--
Jan. 11, 1965.	1430	6.0	.3	.26	.14						18	0	39	1.0				89	49	34	--	127	6.8	35	220
Jan. 29.......	199	8.6	.4	.04	3.0						5	0	162	2.0				244	162	158	--	366	6.2	5	--
Jan. 1-31.....	697	--	--	--	--						--	--	--	--				199	--	--	--	293	6.4	--	--
Feb. 12.......	1930	6.2	.7	.14	.10						18	0	33	2.0				98	49	34	A.0	118	7.0	35	450
Feb. 26.......	642	8.1	1.1	.00	4.6						1	0	215	5.0				392	212	211	A.1	462	4.8	5	--
Feb. 1-28.....	766	--	--	--	--						--	--	--	--				239	--	--	--	316	6.9	--	--

Mar. 17, 1965.	286	7.9	.2	.00	2.6						4	0	162	4.0				268	166	163	.0	366	6.4	2	--
Mar. 26.......	--	--	--	--	--						--	--	--	--				--	--	--	--	--	--	--	170
Mar. 31.......	4990	4.4	.3	.12	.02						8	0	34	1.0				78	39	32	--	102	7.0	50	--
Mar. 1-31.....	1146	--	--	--	--						--	--	--	--				165	--	--	--	248	6.6	--	--
Apr. 1........	4470	5.4	.2	.09	.01						30	0	34	2.5				56	50	26	.1	96	7.0	40	--
Apr. 27.......	396	11	.6	1.2	2.5						18	0	178	2.5				300	201	186	.2	404	6.8	4	--
Apr. 1-30.....	1040	--	--	--	--						--	--	--	--				175	--	--	--	287	7.1	--	--
May 1.........	153	11	.2	.11	2.5						6	0	168	2.0				156	168	163	.1	365	6.4	5	--
May 9.........	--	--	--	--	--						--	--	--	--				--	--	--	--	--	--	--	.8
May 31........	17	11	9.1	.79	11						0	0	600	6.0				906	592	592	1.1	1080	4.5	5	--
May 1-31......	45.1	--	--	--	--						--	--	--	--				436	--	--	--	592	5.4	--	--
June 5........	301	16	21	.27	10						0	0	610	5.0				916	524	524	3.1	1130	3.5	3	--
June 10.......	--	--	--	--	--						--	--	--	--				--	--	--	--	--	--	--	55
June 13.......	110	8.0	.0	.00	.01						4	0	135	3.0				230	144	141	.0	330	7.3	3	--
June 1-30.....	79.9	--	--	--	--						--	--	--	--				381	--	--	--	520	4.6	--	--
July 6........	61	9.9	6.9	.02	20						0	0	660	4.0				992	676	676	.8	1140	4.6	3	--
July 11.......	126	5.1	.1	.02	.01						20	0	57	2.0				118	76	60	.0	177	7.7	5	--
July 12.......	--	--	--	--	--						--	--	--	--				--	--	--	--	--	--	--	240
July 1-31.....	26.2	--	--	--	--						--	--	--	--				256	--	--	--	380	6.1	--	--
Aug. 1........	9.0	4.3	.0	.00	1.7						18	0	163	2.0				268	186	171	.0	394	7.0	3	--
Aug. 17.......	--	--	--	--	--						--	--	--	--				--	--	--	--	--	--	--	10
Aug. 25.......	.4	3.2	.0	.00	3.7						16	0	209	4.0				336	232	219	.0	484	7.7	3	--
Aug. 1-31.....	2.0	--	--	--	--						--	--	--	--				317	--	--	--	466	6.5	--	--
Sept. 1.......	--	--	--	--	--						--	--	--	--				--	--	--	--	--	--	--	.6
Sept. 4.......	32	3.8	.1	.00	.25						3	0	108	2.0				170	119	117	.2	280	6.2	3	--
Sept. 30......	4.0	11	13	.03	7.0						0	0	300	4.0				480	276	276	1.0	629	4.3	3	--
Sept. 1-30....	15.0	--	--	--	--						--	--	--	--				370	--	--	--	534	4.4	--	--

A Potential free acidity.

TRADEWATER RIVER BASIN--Continued

3-3830. TRADEWATER RIVER AT OLNEY, KY.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1......	205	569	492	406	368	156	96	365	1100	445	394	482
2......	451	571	851	336	378	192	124	383	1100	449	404	554
3......	482	573	653	339	373	149	199	402	647	449	416	504
4......	597	577	297	214	443	156	258	428	535	454	428	280
5......	227	578	231	302	446	177	233	453	1130	559	437	337
6......	375	579	156	310	445	223	163	398	471	1140	447	364
7......	425	583	167	327	401	248	241	392	546	277	451	406
8......	441	586	358	342	388	236	230	395	594	235	455	476
9......	452	588	359	288	283	241	266	392	554	252	457	516
10......	468	588	384	210	252	246	289	398	447	252	462	534
11......	476	592	290	127	208	266	282	413	529	177	466	557
12......	487	600	216	143	118	288	302	443	398	239	466	543
13......	494	606	146	170	130	305	339	472	330	269	470	522
14......	504	606	142	230	149	333	368	491	404	290	470	317
15......	510	613	185	249	159	336	316	516	467	367	470	441
16......	516	618	271	144	204	355	242	551	554	378	470	501
17......	518	614	263	260	238	370	246	571	448	360	466	531
18......	521	619	288	141	243	290	282	593	390	364	471	549
19......	526	619	327	286	283	214	288	600	373	364	479	571
20......	530	626	373	298	341	277	305	612	383	375	476	578
21......	534	636	399	286	361	295	370	638	402	364	478	594
22......	536	647	384	324	385	316	313	639	406	357	479	598
23......	540	709	407	330	315	295	330	641	406	357	482	602
24......	543	765	481	327	426	308	348	691	412	357	483	615
25......	546	843	505	308	332	324	348	764	423	357	484	618
26......	551	958	489	316	462	233	333	802	428	357	481	623
27......	556	1110	644	316	307	138	404	772	436	360	478	624
28......	559	1560	404	327	240	145	330	851	444	364	481	621
29......	562	869	411	366	--	273	327	943	447	367	480	621
30......	562	510	408	352	--	206	348	1010	447	371	484	629
31......	565	--	416	362	--	103	--	1080	--	382	484	--
Average	492	683	367	281	309	248	284	583	521	377	462	523

TRADEWATER RIVER BASIN--Continued

3-3830. TRADEWATER RIVER AT OLNEY, KY.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0700 and 1700)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
0700......	57	60	59	60	59	56	55	54	54	52	50	50	51	52	53	53	53	53	52	51	51	51	50	49	49	49	50	51	52	51	50	53
1700......	59	61	61	61	60	57	56	56	54	53	52	52	53	53	54	54	54	54	53	52	53	52	51	51	51	50	51	52	52	52	57	54
November																																
0700......	51	51	51	52	52	51	51	51	49	51	51	54	53	52	53	53	54	54	52	48	46	43	40	40	41	39	40	46	45	41	--	48
1700......	52	53	54	53	53	53	51	52	52	53	55	55	54	54	55	56	55	54	51	49	46	42	41	42	41	40	44	46	46	40	--	50
December																																
0700......	37	39	42	42	43	42	39	38	38	39	43	46	47	44	41	40	41	37	33	33	34	36	38	43	44	44	41	41	42	45	45	41
1700......	38	40	43	43	43	41	39	39	39	40	45	48	46	44	41	40	40	36	34	36	35	36	40	45	44	42	41	42	43	46	--	41
January																																
0700......	45	50	47	44	42	42	44	47	47	43	39	39	39	38	38	37	33	33	33	34	33	36	40	44	46	46	42	41	36	34	32	40
1700......	47	49	47	44	42	43	45	49	45	41	39	39	39	38	39	35	34	33	34	35	35	38	43	44	45	45	42	41	35	33	32	40
February																																
0700......	32	32	32	32	33	33	34	40	41	46	50	48	44	42	41	41	41	41	41	41	43	38	38	40	35	33	33	39	--	--	--	39
1700......	32	32	33	--	33	33	35	42	43	51	51	48	45	43	43	42	42	43	43	43	42	40	40	38	33	33	37	40	--	--	--	40
March																																
0700......	42	45	45	42	38	38	38	39	39	39	39	40	41	42	41	43	47	48	45	40	39	40	44	44	41	39	39	41	49	49	49	42
1700......	44	47	45	40	39	38	39	40	40	40	40	42	43	43	44	46	50	48	46	42	42	43	45	43	41	39	41	37	52	50	50	43
April																																
0700......	49	50	51	51	51	51	57	60	61	59	60	61	61	60	57	56	57	60	60	59	60	62	64	66	68	65	63	59	56	57	--	58
1700......	53	53	52	52	55	57	61	62	61	59	62	63	65	60	57	57	59	61	61	61	62	65	67	69	67	65	61	58	58	60	--	60
May																																
0700......	59	61	62	64	66	68	67	68	69	69	69	68	67	67	69	69	70	70	70	70	70	71	71	72	73	74	73	72	69	67	68	68
1700......	62	64	65	67	69	69	70	71	71	70	70	71	70	71	70	71	71	71	71	71	72	73	74	74	75	76	74	71	71	70	69	70
June																																
0700......	68	69	69	71	72	73	71	72	72	72	74	74	74	73	72	72	71	70	70	70	71	72	73	73	73	72	73	75	76	77	--	72
1700......	69	70	72	73	74	73	73	74	72	74	76	76	76	75	74	73	72	72	72	72	73	75	74	75	75	75	76	78	78	79	--	74
July																																
0700......	76	76	76	76	76	75	75	75	76	75	73	73	73	74	75	74	75	75	76	76	76	76	76	79	79	77	78	78	75	75	72	76
1700......	76	78	78	78	78	76	76	77	76	74	75	76	76	75	77	76	77	78	78	78	78	78	80	81	81	79	80	79	76	76	74	77
August																																
0700......	73	73	72	72	72	73	74	74	73	72	72	72	73	74	75	75	75	76	77	76	75	75	75	74	75	75	75	75	71	69	72	74
1700......	75	74	74	74	74	75	75	75	75	74	74	74	75	76	76	76	77	78	77	77	77	77	76	76	76	75	76	75	73	73	73	75
September																																
0700......	71	68	68	68	68	69	69	70	71	71	72	71	70	70	71	71	72	73	73	73	74	74	72	70	65	63	62	62	62	64	--	69
1700......	72	69	68	69	70	71	71	72	73	73	72	71	71	71	72	73	74	74	74	75	75	74	73	70	66	64	64	64	65	65	--	70

TRADEWATER RIVER BASIN--Continued

3-3830. TRADEWATER RIVER AT OLNEY, KY.--Continued

Suspended sediment, water year October 1964 to September 1965

Day	OCTOBER Mean discharge (cfs)	OCTOBER Suspended sediment Mean concentration (ppm)	OCTOBER Suspended sediment Tons per day	NOVEMBER Mean discharge (cfs)	NOVEMBER Suspended sediment Mean concentration (ppm)	NOVEMBER Suspended sediment Tons per day	DECEMBER Mean discharge (cfs)	DECEMBER Suspended sediment Mean concentration (ppm)	DECEMBER Suspended sediment Tons per day
1..	426	15	S 18	1.5	3	T	75	8	1.6
2..	132	3	1.1	1.5	3	T	63	4	.7
3..	90	16	A 4	1.8	3	T	427	80	A 90
4..	293	--	E 95	1.5	3	T	1120	100	A 300
5..	141	49	S 21	1.3	3	T	1140	80	246
6..	62	18	3.0	1.1	4	T	1080	109	318
7..	41	13	1.4	1.1	3	T	1090	64	188
8..	26	10	.7	1.1	3	T	962	30	78
9..	18	7	.3	.9	3	T	567	15	23
10..	12	5	.2	1.8	3	T	327	9	7.9
11..	8.6	4	.1	2.8	3	T	1100	97	S 332
12..	7.4	3	.1	2.8	4	T	1580	124	529
13..	5.8	2	T	2.8	3	T	1560	77	324
14..	3.8	2	T	2.3	3	T	1610	61	265
15..	2.3	2	T	1.8	2	T	1710	31	143
16..	2.5	2	T	1.3	2	T	1630	20	88
17..	2.5	2	T	1.3	2	T	1120	13	39
18..	2.5	2	T	1.8	2	T	606	9	15
19..	2.0	2	T	2.8	3	T	314	6	5.1
20..	2.0	3	T	2.3	2	T	151	5	2.0
21..	2.3	8	T	4.1	2	T	121	4	1.3
22..	2.3	10	.1	9.5	7	0.2	109	2	.6
23..	2.3	8	T	11	11	.3	107	2	.6
24..	2.3	6	T	7.9	6	.1	111	3	.9
25..	2.5	4	T	8.2	5	.1	150	6	2.4
26..	2.5	3	T	12	4	.1	234	12	7.6
27..	2.3	3	T	71	9	1.7	268	8	5.8
28..	2.3	3	T	136	19	7.0	196	4	2.1
29..	2.0	3	T	143	20	7.7	150	3	1.2
30..	1.5	4	T	95	15	3.8	134	3	1.1
31..	1.5	3	T	--	--	--	128	2	.7
Total	1304.2	--	145.4	533.3	--	21.3	19940	--	3019.6

Day	JANUARY Mean discharge (cfs)	JANUARY Suspended sediment Mean concentration (ppm)	JANUARY Suspended sediment Tons per day	FEBRUARY Mean discharge (cfs)	FEBRUARY Suspended sediment Mean concentration (ppm)	FEBRUARY Suspended sediment Tons per day	MARCH Mean discharge (cfs)	MARCH Suspended sediment Mean concentration (ppm)	MARCH Suspended sediment Tons per day
1..	184	7	S 4.2	105	7	2.0	1110	43	129
2..	638	49	84	95	7	1.8	1420	45	173
3..	1150	119	369	90	7	1.7	1490	42	169
4..	1050	58	164	85	7	1.6	1560	37	156
5..	755	24	49	80	8	1.7	1640	13	58
6..	476	12	15	88	10	2.4	1630	10	44
7..	330	12	11	216	22	S 15	1510	12	49
8..	236	22	14	616	59	98	1360	15	55
9..	867	22	S 348	642	41	71	1080	16	47
10..	1420	122	468	1070	172	S 529	822	15	33
11..	1430	87	336	1420	153	591	549	16	24
12..	1500	42	170	1930	129	672	397	15	16
13..	1620	18	79	2160	64	373	303	13	11
14..	1610	12	52	2490	48	284	241	10	6.5
15..	1320	15	53	2200	26	154	197	8	4.3
16..	1090	12	35	1910	17	88	170	8	3.7
17..	926	21	53	1420	16	61	286	17	S 14
18..	724	16	31	941	11	28	671	92	167
19..	494	16	21	560	8	12	651	55	97
20..	388	12	13	331	8	7.1	434	19	22
21..	353	7	6.7	201	11	6.0	329	15	13
22..	373	15	15	173	7	3.3	284	14	11
23..	420	20	23	170	6	2.8	221	10	6.0
24..	457	21	26	144	6	2.3	181	6	2.9
25..	426	20	23	252	24	S 19	405	36	S 52
26..	352	17	16	642	106	184	1150	134	416
27..	285	12	9.2	623	56	94	1210	100	327
28..	237	11	7.0	1070	62	179	1320	94	335
29..	199	10	5.4	--	--	--	3270	218	S 2060
30..	166	9	4.0	--	--	--	4650	188	2360
31..	125	8	2.7	--	--	--	4990	136	1830
Total	21601	--	2507.2	21434	--	3484.7	35531	--	8691.4

E Estimated.
S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.

TRADEWATER RIVER BASIN--Continued

3-3830. TRADEWATER RIVER AT OLNEY, KY.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	4470	139	1680	153	4	1.7	27	3	0.2
2..	3270	64	565	128	6	2.1	20	4	.2
3..	2510	19	129	126	6	2.0	71	12	2.3
4..	2050	21	116	116	6	1.9	194	6	3.1
5..	1770	42	201	103	6	1.7	301	13	11
6..	1620	65	284	77	6	1.2	191	9	4.6
7..	1610	42	183	57	5	.8	100	2	.5
8..	1500	34	138	46	5	.6	89	2	.5
9..	1260	28	95	41	4	.4	250	256	S 251
10..	1030	27	75	53	4	.6	353	36	S 37
11..	875	76	180	45	3	.4	227	8	4.9
12..	681	25	46	32	3	.3	161	5	2.2
13..	478	23	30	27	3	.2	110	3	.9
14..	340	20	18	25	3	.2	67	2	.4
15..	715	105	S 267	23	3	.2	45	2	.2
16..	1180	100	319	22	3	.2	36	2	.2
17..	1060	45	129	22	4	.2	29	3	.2
18..	799	19	41	21	5	.3	24	3	.2
19..	576	12	19	22	7	.4	20	3	.2
20..	503	13	18	23	7	.4	15	3	.1
21..	447	13	16	24	6	.4	13	3	.1
22..	344	8	7.4	26	5	.4	11	3	.1
23..	272	6	4.4	25	4	.3	9.8	3	.1
24..	232	4	2.5	21	2	.1	9.0	3	.1
25..	185	3	1.5	21	2	.1	7.8	3	.1
26..	222	4	2.4	22	2	.1	6.2	3	.1
27..	396	13	14	20	3	.2	5.0	4	.1
28..	360	10	9.7	19	2	.1	3.3	5	T
29..	252	4	2.7	21	2	.1	1.4	4	T
30..	191	3	1.5	19	2	.1	1.6	4	T
31..	--	--	--	17	2	.1	--	--	--
Total	31198	--	4595.1	1397	--	17.8	2398.1	--	320.7

Day	JULY			AUGUST			SEPTEMBER		
1..	1.2	3	T	9.0	8	0.2	3.5	8	0.1
2..	1.4	3	T	7.8	7	.1	21	9	.5
3..	3.8	3	T	6.6	5	.1	70	8	1.5
4..	21	--	E 0.9	4.8	4	.1	32	7	.6
5..	126	--	E 17	4.5	3	T	15	6	.2
6..	61	6	B 1	3.8	3	T	8.2	5	.1
7..	29	4	B .3	3.0	3	T	14	5	.2
8..	21	4	B .2	2.5	3	T	17	5	.2
9..	18	4	B .2	2.5	4	T	9.4	4	.1
10..	222	60	A 35	1.6	4	T	4.8	4	.1
11..	126	14	B 5	1.1	4	T	4.2	3	T
12..	33	5	B .4	.90	4	T	13	5	.2
13..	23	4	.2	.90	5	T	81	10	2.2
14..	20	3	.2	.90	7	T	68	9	1.7
15..	17	3	.1	.70	8	T	29	7	.5
16..	14	3	.1	.70	9	T	15	5	.2
17..	9.0	4	.1	.70	8	T	7.4	4	.1
18..	5.0	4	.1	.70	7	T	4.5	3	T
19..	4.5	4	T	.70	7	T	3.5	3	T
20..	4.0	3	T	.70	7	T	3.0	3	T
21..	3.3	3	T	.60	8	T	2.3	2	T
22..	3.0	3	T	.60	8	T	2.3	2	T
23..	3.3	3	T	.60	9	T	2.3	2	T
24..	3.0	4	T	.50	8	T	2.3	2	T
25..	3.3	5	T	.40	7	T	2.1	3	T
26..	4.8	5	.1	.60	7	T	2.0	3	T
27..	4.3	5	.1	.70	6	T	1.8	2	T
28..	3.5	5	T	.60	7	T	2.0	2	T
29..	4.3	7	.1	.60	7	T	5.4	3	T
30..	9.8	8	.2	.60	7	T	4.0	3	T
31..	10	10	.3	.60	7	T	--	--	--
Total	812.5	--	61.9	60.50	--	0.9	450.0	--	8.8

Total discharge for year (cfs-days).. 136659.6
Total load for year (tons).. 22874.8

E Estimated.
S Computed by subdividing day.
T Less than 0.05 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

TRADEWATER RIVER BASIN--Continued

3-3830. TRADEWATER RIVER AT OLNEY, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
June 9, 1965........	1820			424	733		67	81	93	97	99	99	100					SBWC
June 9.............	1820			424	733		47	65	87	97	98	99	100					SBN

CUMBERLAND RIVER BASIN

3-4013.8. LITTLE YELLOW CREEK NEAR MIDDLESBORO, KY.

LOCATION.--At bridge over spillway at Fern Lake, at Middlesboro, Bell County.
RECORDS AVAILABLE.--Chemical analyses: May 1964 to September 1965; periodic sampling prior to August 1964.
REMARKS.--Samples for iron and manganese filtered clear when collected. Occasional regulation from Fern Lake.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)	Turbidity
																	Calcium, magnesium	Noncarbonate						
Nov. 4, 1964.	--	0.47	0.13						8	0	4.4	1.5	--	--		--	9	2		27	6.6	3	0.0	4
Dec. 9.......	--	.36	.00						7	0	6.0	1.0	--	--		--	8	2		28	6.3	8	.0	0
Dec. 31......	--	.24	.13						5	0	7.6	2.0	--	--		--	6	2		27	6.2	12	.0	7
Jan. 27, 1965	--	.13	.17						5	0	5.6	1.0	0.0	0.4		12	8	4		24	6.3	5	.0	15
Feb. 24A.....	--	--	--						8	0	4.8	1.0	.0	.2		20	12	6		27	6.8	5	.0	20
Mar. 23......	--	.06	.08						6	0	6.4	1.5	--	--		--	8	3		25	6.1	3	.0	3
Apr. 28......	30	.13	.06						6	0	5.2	1.0	--	--		--	8	3		24	6.0	5	.1	13
May 26.......	1.76	.13	06						6	0	4.8	2.4	--	--		--	9	4		26	5.8	0	--	.0
June 30......	--	.00	.10						6	0	5.8	2.0	--	--		--	10	5		26	5.8	0	--	.0
July 20......	--	.59	.06						6	0	10	2.0	--	--		--	3	0		30	6.0	3	--	.0
Aug. 25......	--	.10	.01						9	0	6.0	1.0	--	--		--	11	4		28	6.5	4	.0	0
Sept. 23.....	--	.15	.00						8	0	6.0	1.5	--	--		--	10	4		30	6.2	5	.0	0

A Includes 12.0 ppm dissolved oxygen (98 percent saturation).

CUMBERLAND RIVER BASIN--Continued

3-4014.5. STONY FORK NEAR MOUTH, AT MIDDLESBORO, KY.

LOCATION.--At bridge on State Highway 1599, between State Highways 74 and 441, at Middlesboro, Bell County, and approximately 0.6 mile above mouth.
DRAINAGE AREA.--16.4 square miles at mouth.
RECORDS AVAILABLE.--Chemical analyses: May 1964 to September 1965; periodic sampling only prior to August 1964.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)	Turbidity
																			Calcium, magnesium	Noncarbonate					
Nov. 4, 1964.	3.14			0.50	0.30						42	0	195	4.0	--	--		--	216	182	484	7.2	2	0.0	1
Dec. 9.......	19.9			.44	.26						26	0	93	3.0	--	--		--	98	76	239	6.8	2	.0	35
Dec. 31......	34.9			.67	.62						22	0	80	2.0	--	--		--	93	75	226	6.7	3	.0	50
Jan. 27, 1965	38.1			.56	.53						20	0	68	2.0	.0	1.2		116	82	66	199	6.9	3	.0	80
Feb. 24......	15.4			--	--						27	0	105	2.0	.1	1.2		174	123	101	257	7.1	3	.0	30
Mar. 23......	--			.69	.04						24	0	78	2.5	--	--		--	97	78	225	7.0	3	.0	65
Apr. 28......	47.2			.50	.09						23	0	58	2.0	--	--		--	74	55	178	6.6	5	.0	70
May 26.......	7.53			.04	.52						33	0	142	2.0	--	--		--	176	149	367	6.5	5	--	400
June 30......	2.78			.03	.81						34	0	195	2.0	--	--		--	213	185	463	6.5	5	--	35
July 21......	1.14			.00	.25						54	0	270	3.0	--	--		--	306	262	622	7.0	75	--	.0
Aug. 25......	2.1			.04	.16						72	0	217	2.0	--	--		--	264	205	556	7.4	3	.0	.0
Sept. 23.....	1.6			.04	.08						63	0	264	2.0	--	--		--	306	254	644	7.1	4	.0	.0

CUMBERLAND RIVER BASIN--Continued

3-4015.2. YELLOW CREEK BYPASS AT MOUTH, AT MIDDLESBORO, KY.

LOCATION.--Near point of hairpin bend in lane which is eastward extension of Belt Line Road at Middlesboro, Bell County, 0.2 mile above mouth, and 0.9 mile downstream from Fourmile Run.
DRAINAGE AREA.--37.8 square miles at mouth.
RECORDS AVAILABLE.--Chemical analyses: May 1964 to September 1965; periodic sampling only prior to August 1964.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfm)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)	Turbidity
Nov. 5, 1964.	4.12			0.35	0.27						56	0	185	6.0	--	--		--	232	162		521	7.8	3	0.0	2
Dec. 9.......	18.6			.55	.24						40	0	99	2.0	--	--		--	124	91		295	6.9	5	.0	55
Dec. 31......	38.4			.13	.23						42	0	101	3.0	--	--		--	127	92		295	6.9	5	.0	115
Jan. 27, 1965	32.8			1.1	.63						38	0	86	2.0	0.0	1.7		158	113	82		264	7.3	5	.0	100
Feb. 24A.....	15.1			--	--						62	0	120	2.0	.0	1.4		226	160	109		367	7.5	3	.0	25
Mar. 23......	--			.48	.07						22	0	59	2.5	--	--		--	76	58		184	6.7	5	.0	40
Apr. 28......	50.1			.14	.24						36	0	72	1.5	--	--		--	98	68		228	6.8	12	.0	75
May 26.......	19.2			.94	.31						38	0	120	2.0	--	--		--	180	149		389	6.6	7	--	1000
July 1.......	3.6			.03	.42						48	0	174	2.0	--	--		--	220	161		447	6.8	1	--	55
Aug. 25......	5			.18	.12						69	0	126	2.0	--	--		--	176	120		395	7.4	5	.0	2
Sept. 23.....	4			.09	.04						92	0	208	3.0	--	--		--	264	188		566	7.7	3	.0	0

A Includes 13.2 ppm dissolved oxygen (99 percent saturation).

CUMBERLAND RIVER BASIN--Continued

3-4020. YELLOW CREEK NEAR MIDDLESBORO, KY.

LOCATION.--At gaging station on U.S. Highway 25E, 0.4 mile upstream from Low Ash Hollow, 3 miles north of Middlesboro, Bell County, and 6.0 miles upstream from Clear Fork.
DRAINAGE AREA.--58.2 square miles.
RECORDS AVAILABLE.--Chemical analyses: May 1964 to September 1965; periodic sampling only, prior to August 1964.
REMARKS.--Occasional regulation from Fern Lake.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)	Turbidity
Nov. 4, 1964.	1.55	--	1.6	0.52	--	--				94	0	142	48	--	--		--	205	128		608	7.1	20	0.1	8
Dec. 9.......	17.5	6.0	1.2	.61	20	12				41	0	74	13	0.3	5.6		174	100	66		284	6.4	10	.1	10
Dec. 31......	24.2	6.0	.21	.12	23	13				41	0	76	28	.2	3.5		192	111	78		330	6.6	6	.0	55
Jan. 27, 1965	22.6	5.8	1.1	.56	22	9.3				36	0	65	10	.0	3.0		147	92	62		250	6.8	3	.0	65
Feb. 24A.....	--	5.6	--	--	31	14				62	0	95	14	.0	1.5		222	135	84		360	7.1	10	.1	20
Mar. 23......	--	5.8	.77	.07	23	11				42	0	72	6.0	.1	4.0		176	103	68		253	6.7	15	.0	40
Apr. 28......	192	5.8	.15	.12	17	8.9				32	0	54	5.5	.1	3.4		140	79	53		203	6.4	10	.1	55
May 26.......	27	5.6	1.4	3.8	37	21				46	0	144	14	.1	2.3		278	179	142		431	6.7	7	.1	220
July 1.......	11.5	6.4	.10	.85	54	29				130	0	174	18	.1	.6		396	254	147		602	6.9	20	.1	120
July 21......	4.85	11	.30	.72	54	29				154	2	188	79	.3	9.8		516	254	128		789	8.3	45	.1	15
Aug. 25......	9.5	6.7	1.1	.53	46	22				118	0	132	42	.1	10		377	206	109		617	6.9	20	.2	40
Sept. 23.....	5.8	8.8	3.0	.79	56	28				200	0	164	120	.4	1.8		652	255	90		1020	7.1	130	.6	10

A Includes 11.6 ppm dissolved oxygen (91 percent saturation).

CUMBERLAND RIVER BASIN--Continued

3-4035. CUMBERLAND RIVER AT BARBOURVILLE KY.

LOCATION.--At gaging station at bridge on State Highway 11, at Barbourville, Knox County, 0.4 mile upstream from Richland Creek.
DRAINAGE AREA.--960 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to August 1950.
Water temperatures: October 1949 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 85°F Aug. 16, 18; minimum, freezing point Jan. 19, Feb. 2-5.
EXTREMES, 1949-65.--Water temperatures: Maximum, 91°F June 28, 1952; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0800 and 1700)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
0800.......	66	66	66	66	66	61	55	54	54	54	52	57	53	55	56	56	55	55	56	55	50	49	48	48	45	45	50	52	52	52	54	55
1700.......	66	68	66	68	66	58	56	56	56	54	54	53	55	57	58	56	55	55	56	54	53	53	52	51	50	51	52	52	54	55	55	56
November																																
0800.......	54	55	55	54	54	53	52	53	52	52	52	52	53	55	52	54	55	56	56	55	49	44	41	41	44	47	48	50	50	45	--	51
1700.......	56	56	56	55	54	54	52	52	52	52	51	52	54	52	54	55	56	--	57	54	48	43	42	44	45	50	49	51	50	45	--	51
December																																
0800.......	40	40	42	45	49	44	42	40	40	40	42	47	50	47	42	40	41	41	38	39	40	42	42	48	52	54	50	49	45	48	48	44
1700.......	41	41	44	44	48	47	42	40	39	40	43	48	49	47	42	42	42	42	38	39	41	43	43	50	53	52	50	48	47	49	48	45
January																																
0800.......	48	50	48	45	43	45	45	46	50	47	45	44	44	42	42	42	35	35	32	33	35	37	41	45	48	49	45	42	40	40	35	43
1700.......	50	50	48	44	43	45	45	48	49	45	45	46	44	42	42	38	35	35	33	37	38	40	42	44	48	48	43	42	41	38	35	43
February																																
0800.......	35	32	32	32	32	34	36	40	45	50	52	55	50	45	42	42	44	44	45	45	44	40	40	42	42	39	48	39	--	--	--	42
1700.......	35	32	32	32	35	35	38	40	46	50	54	54	49	45	42	43	44	45	45	46	--	40	40	46	40	39	--	45	--	--	--	42
March																																
0800.......	42	47	50	51	45	44	42	45	42	--	42	44	42	42	42	42	48	48	47	45	40	40	45	46	46	50	48	--	52	52	49	45
1700.......	46	50	52	50	45	43	--	42	43	--	44	45	45	--	45	50	49	50	49	45	41	43	45	45	48	50	49	52	52	52	50	47
April																																
0800.......	49	52	52	50	50	58	57	57	58	55	60	62	61	60	60	58	55	57	59	59	60	62	64	66	68	68	65	62	59	58	--	59
1700.......	52	52	52	51	55	58	59	58	58	60	62	64	61	61	59	59	57	59	60	61	62	66	68	70	70	69	65	60	59	60	--	60
May																																
0800.......	60	61	62	65	68	70	70	70	70	71	73	71	69	69	70	72	73	74	74	72	72	72	76	74	74	75	77	74	73	70	70	71
1700.......	64	66	70	70	72	72	72	72	72	75	72	72	72	72	72	74	76	75	76	74	75	76	76	78	75	77	76	77	74	72	74	73
June																																
0800.......	71	73	73	72	75	74	75	72	75	76	78	75	75	75	75	72	70	70	70	70	72	75	77	78	75	77	78	74	79	79	--	74
1700.......	76	76	78	75	75	76	74	78	79	80	79	78	79	78	74	73	74	72	73	75	77	78	79	79	79	79	81	81	82	82	--	77
July																																
0800.......	78	78	79	80	79	79	80	78	79	78	75	77	80	80	78	78	78	78	80	78	78	78	78	75	74	74	74	74	75	74	74	77
1700.......	82	82	82	80	81	83	80	81	80	78	80	79	83	81	81	81	80	80	82	81	80	82	80	75	75	76	75	78	78	78	78	80
August																																
0800.......	73	73	74	73	74	76	75	78	76	75	75	75	77	78	79	80	80	80	79	79	78	78	78	78	78	78	78	79	72	68	73	76
1700.......	77	78	77	--	79	80	80	80	79	79	80	79	81	82	84	85	83	85	82	82	80	84	82	81	81	83	83	82	74	76	78	81
September																																
0800.......	75	69	70	72	73	75	73	73	74	73	76	76	74	72	73	75	74	75	76	74	75	74	74	71	63	61	61	62	64	67	--	71
1700.......	73	75	77	78	76	77	79	81	80	81	83	77	76	77	78	77	80	81	80	81	79	80	75	70	68	67	68	69	72	68	--	76

CUMBERLAND RIVER BASIN--Continued

3-4071. CANE BRANCH NEAR PARKERS LAKE, KY.

LOCATION.--At gaging station, 2,100 feet upstream from confluence with West Fork Cane Branch, 2.5 miles northeast of Parkers Lake, and 2.6 miles east of Greenwood, McCreary County.

DRAINAGE AREA.--0.67 square miles.

RECORDS AVAILABLE.--Chemical analyses: January 1956 to September 1965.
Water temperatures: January to September 1956, unpublished; October 1956 to September 1962.
Sediment records: January 1956 to September 1962, October 1963 to September 1965.

EXTREMES, 1964-65.--Sediment concentrations: Maximum daily, 10,700 ppm July 10; minimum daily, 2 ppm Oct. 27, Nov. 10, Apr. 24, and June 26.
Sediment loads: Maximum daily, 341 tons July 23; minimum daily, less than 0.005 ton on many days during October to December, April to September.

EXTREMES, 1956-62, 1963-65.--Sediment concentrations: Maximum daily, 18,000 ppm Oct. 28, 1958; minimum daily, 1 ppm on many days during 1956-57, 1963-64.
Sediment loads: Maximum daily, 750 tons Feb. 27, 1962; minimum daily, less than 0.005 ton on many days during most years.

REMARKS.--All acidity values reported are determined to pH 7.0. Flow affected by ice Jan. 30 to Feb. 1.

REVISIONS.--Revised figures for discharge for the water year 1960 in WSP 1742 superseding those previously published are: Total discharge, 464.12 cfs.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Non-carbonate	Potential free acidity (H^{+1})	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 6, 1964..	0.16	--	--	--	--	--	--	1.3	--	0	191	--	--	--	290	123	123	1.7	549	3.4	--
Oct. 13.......	.08	--	--	--	--	--	--	1.7	--	0	243	--	--	--	372	164	164	2.0	649	3.3	--
Oct. 20.......	12	--	--	--	--	--	--	1.7	--	0	250	--	--	--	377	172	172	2.2	664	3.3	--
Oct. 27.......	12	--	--	--	--	--	--	1.3	--	0	236	--	--	--	341	164	164	1.6	640	3.4	--
Nov. 3........	.03	--	--	--	--	--	--	1.1	--	0	247	--	--	--	357	162	162	1.7	675	3.4	--
Nov. 10.......	.08	--	--	--	--	--	--	1.1	--	0	245	--	--	--	348	166	166	1.8	681	3.3	--
Nov. 17.......	.10	--	--	--	--	--	--	1.1	--	0	239	--	--	--	336	162	162	1.8	664	3.3	--
Nov. 24.......	.15	--	--	--	--	--	--	1.1	--	0	185	--	--	--	261	124	124	1.4	513	3.5	--
Dec. 1........	.15	--	--	--	--	--	--	1.3	--	0	150	--	--	--	210	105	105	1.2	438	3.5	--
Dec. 8........	.38	--	--	--	--	--	--	1.6	--	0	116	--	--	--	160	84	84	1.0	348	3.6	--
Dec. 15.......	.67	--	--	--	--	--	--	1.0	--	0	95	--	--	--	140	68	68	.7	299	3.7	--
Dec. 22.......	.89	--	--	--	--	--	--	1.1	--	0	100	--	--	--	160	73	73	1.1	326	3.6	--
Dec. 29.......	.79	--	--	--	--	--	--	1.6	--	0	110	--	--	--	166	78	76	1.1	338	3.6	--
Dec. 30.......	.70	8.0	5.6	4.1	5.3	16	10	1.3	1.1	0	123	4.0	0.2	0.2	199	86	86	1.3	378	3.6	3
Jan. 5, 1965..	1.1	--	--	--	--	--	--	1.3	--	0	86	--	--	--	134	64	64	.9	264	3.6	--
Jan. 12.......	2.2	--	--	--	--	--	--	1.4	--	0	73	--	--	--	107	50	50	.6	225	3.9	--
Jan. 21.......	.55	--	--	--	--	--	--	1.0	--	0	159	--	--	--	235	112	112	1.5	445	3.6	--
Jan. 28.......	.85	--	--	--	--	--	--	1.0	--	0	106	--	--	--	162	76	76	.6	325	3.6	--
Feb. 6........	.49	--	--	--	--	--	--	1.0	--	0	169	--	--	--	250	122	122	1.2	466	3.6	--
Feb. 13.......	2.6	--	--	--	--	--	--	1.0	--	0	71	--	--	--	112	48	46	.6	221	4.0	--
Feb. 20.......	.52	--	--	--	--	--	--	1.0	--	0	135	--	--	--	202	100	100	1.0	385	3.7	--
Feb. 27.......	.85	--	--	--	--	--	--	1.3	--	0	121	--	--	--	184	88	88	.8	361	3.7	--
Mar. 6........	2.4	--	--	--	--	--	--	1.5	--	0	72	--	--	--	100	51	51	.6	222	3.9	--
Mar. 13.......	.79	--	--	--	--	--	--	1.1	--	0	112	--	--	--	177	84	84	.9	338	3.6	--
Mar. 20.......	1.1	--	--	--	--	--	--	.8	--	0	82	--	--	--	132	64	64	.6	252	4.0	--
Mar. 27.......	3.6	--	--	--	--	--	--	.9	--	0	57	--	--	--	95	42	42	.5	180	4.1	--

Apr. 3, 1965..	1.1	--	--	--	--	--	--	1.0	--	0	106	--	--	--	153	80	80	.6	294	3.8	--
Apr. 10.......	1.1	--	--	--	--	--	--	1.3	--	0	91	--	--	--	142	71	71	.8	279	3.8	--
Apr. 17.......	.85	--	--	--	--	--	--	2.3	--	0	106	1.0	--	--	158	78	78	.8	323	3.7	--
Apr. 24........	.46	--	--	--	--	--	--	2.3	--	0	133	1.5	--	--	202	100	100	1.0	389	3.8	--
May 1.........	.64	--	--	--	--	--	--	--	--	0	102	--	--	--	146	74	74	A .6	307	4.4	--
May 8.........	.20	--	--	--	--	--	--	--	--	0	182	--	--	--	259	136	136	A1.1	510	4.2	--
May 12........	.16	11	6.5	3.3	5.5	29	19	1.5	2.1	0	217	3.0	.3	.1	315	151	151	A1.4	603	4.2	0
May 22........	.12	--	--	--	--	--	--	1.4	--	0	240	--	--	--	350	182	182	A1.8	654	3.4	--
May 29........	.12	--	--	--	--	--	--	1.4	--	0	160	--	--	--	238	116	116	A1.2	489	3.7	--
June 4........	.12	--	--	--	--	--	--	1.7	--	0	230	--	--	--	350	165	165	A1.8	663	3.9	--
June 12.......	.26	--	--	--	--	--	--	1.4	--	0	152	--	--	--	222	110	110	A1.2	499	4.3	--
June 19.......	.08	--	--	--	--	--	--	1.7	--	0	194	--	--	--	303	140	140	A1.4	566	3.6	--
June 22.......	.06	--	--	3.8	10	--	--	--	--	0	202	10	1.5	.2	308	146	146	A1.4	610	3.6	--
June 26.......	.06	--	--	--	--	--	--	1.7	--	0	218	--	--	--	344	158	158	A1.6	626	3.6	--
July 3........	.06	--	--	--	--	--	--	1.6	--	0	217	--	--	--	319	160	160	A1.2	653	3.5	--
July 9........	--	--	--	--	--	--	--	1.1	--	0	154	--	--	--	234	114	114	A1.1	497	3.8	--
July 17.......	.04	--	--	--	--	--	--	1.6	--	0	202	--	--	--	299	150	150	A1.5	626	3.6	--
July 24.......	.14	--	--	--	--	--	--	1.3	--	0	160	--	--	--	240	110	110	A1.4	498	3.8	--
July 31.......	.05	--	--	--	--	--	--	1.4	--	0	186	--	--	--	293	139	139	A1.0	568	3.8	--
Aug. 7........	.05	--	--	--	--	--	--	1.4	--	0	193	--	--	--	296	144	144	A1.2	586	3.8	--
Aug. 14.......	.04	--	--	--	--	--	--	1.4	--	0	206	--	--	--	317	147	147	A1.5	623	3.8	--
Aug. 21.......	.03	--	--	--	--	--	--	1.8	--	0	222	--	--	--	368	157	157	A1.8	655	3.6	--
Aug. 25.......	.03	14	5.3	3.5	9.1	27	21	1.6	2.9	0	204	2.0	.2	.2	326	154	154	A1.5	602	3.5	2
Aug. 28.......	.04	--	--	--	--	--	--	1.6	--	0	180	--	--	--	334	127	127	A1.4	558	3.7	--
Sept. 4.......	.02	--	--	--	--	--	--	1.8	--	0	177	--	--	--	265	130	130	A1.4	530	3.6	--
Sept. 11......	.02	--	--	--	--	--	--	1.8	--	0	170	--	--	--	267	128	128	A1.3	514	3.9	--
Sept. 18......	.03	--	--	--	--	--	--	1.4	--	0	194	--	--	--	298	134	134	A1.9	565	3.8	--
Sept. 26......	.03	--	--	--	--	--	--	1.6	--	0	210	--	--	--	318	148	148	A2.1	600	3.9	--

A Total acidity.

CUMBERLAND RIVER BASIN--Continued

3-4071. CANE BRANCH NEAR PARKERS LAKE, KY.--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER Mean discharge (cfs)	OCTOBER Suspended sediment Mean concentration (ppm)	OCTOBER Suspended sediment Tons per day	NOVEMBER Mean discharge (cfs)	NOVEMBER Suspended sediment Mean concentration (ppm)	NOVEMBER Suspended sediment Tons per day	DECEMBER Mean discharge (cfs)	DECEMBER Suspended sediment Mean concentration (ppm)	DECEMBER Suspended sediment Tons per day
1..	0.30	--	1.3	0.04	5	T	0.16	7	T
2..	.73	2040	S 22.2	.04	3	T	.19	5	T
3..	.25	--	.03	.04	3	T	4.3	1030	S 18.7
4..	.93	500	B 1.2	.04	3	T	4.3	220	B 2.6
5..	.27	8	.01	.04	3	T	1.4	--	.07
6..	.16	6	T	.04	4	T	.80	10	.02
7..	.12	5	T	.04	3	T	.52	6	.01
8..	.10	5	T	.31	350	A 0.3	.41	10	.01
9..	.10	5	T	.10	7	T	.32	7	.01
10..	.08	4	T	.08	2	T	.26	4	T
11..	.08	5	T	.08	4	T	1.0	186	S .67
12..	.08	5	T	.06	5	T	4.5	--	14
13..	.08	5	T	.26	280	A .2	1.7	17	.08
14..	.08	5	T	.10	5	T	.96	13	.03
15..	.08	5	T	.08	5	T	.70	8	.02
16..	.18	22	.01	.08	5	T	.55	8	.01
17..	.10	8	T	.10	3	T	.93	80	B .2
18..	.10	5	T	.11	3	T	.73	12	.02
19..	.12	5	T	.92	556	S 2.89	.73	9	.02
20..	.10	3	T	.78	--	.07	1.0	8	.02
21..	.10	3	T	.28	5	T	.96	10	.03
22..	.10	5	T	.16	5	T	.89	10	.02
23..	.08	5	T	.15	5	T	.76	9	.02
24..	.06	5	T	.16	4	T	.73	--	.07
25..	.06	4	T	1.8	230	A 1.1	.98	--	.2
26..	.06	3	T	.81	14	.03	1.1	--	.2
27..	.08	2	T	.46	7	.01	1.0	15	.04
28..	.26	5	T	.36	5	T	.89	10	.02
29..	.10	8	T	.26	5	T	.76	9	.02
30..	.06	5	T	.22	8	T	.67	10	.02
31..	.05	5	T	--	--	--	.52	9	.01
Total	5.05	--	24.78	8.00	--	4.63	34.72	--	37.15

Day	JANUARY Mean discharge (cfs)	JANUARY Mean concentration (ppm)	JANUARY Tons per day	FEBRUARY Mean discharge (cfs)	FEBRUARY Mean concentration (ppm)	FEBRUARY Tons per day	MARCH Mean discharge (cfs)	MARCH Mean concentration (ppm)	MARCH Tons per day
1..	1.2	1270	S 6.54	0.50	--	0.07	0.79	--	0.04
2..	2.6	1030	S 12.4	.44	13	.02	2.2	349	S 2.78
3..	2.2	24	.14	.41	10	.01	2.2	--	.2
4..	1.4	21	.08	.38	8	.01	7.8	1220	S 33.2
5..	1.1	19	.06	.38	12	.01	4.4	100	B 1.2
6..	.82	10	.02	.72	--	.2	2.6	35	.25
7..	.70	11	.02	1.9	180	B .9	1.7	21	.10
8..	.58	8	.01	1.5	21	.08	1.6	11	.05
9..	2.7	255	S 2.46	1.4	12	.05	1.4	10	.04
10..	12	1500	A 48	1.2	8	.03	1.1	9	.03
11..	3.9	--	1.3	3.0	550	A 4.5	.96	8	.02
12..	2.2	52	.31	7.0	--	9.7	.89	10	.02
13..	1.5	15	.06	2.7	52	.38	.76	13	.03
14..	1.1	13	.04	1.8	16	.08	.70	11	.02
15..	.96	12	.03	1.3	11	.04	.61	10	.02
16..	.92	12	.03	1.0	9	.02	.52	10	.01
17..	.77	9	.02	.85	7	.02	2.6	3780	S 94.2
18..	.70	9	.02	.76	8	.02	2.0	75	B .4
19..	.61	12	.02	.67	7	.01	1.4	34	.13
20..	.64	16	.03	.55	12	.02	1.1	25	.07
21..	.64	17	.03	.59	10	.02	1.0	152	.41
22..	.80	26	.06	.46	10	.01	.82	26	.06
23..	1.0	34	.09	.46	8	.01	.76	15	.03
24..	1.4	103	S .46	.69	25	A .05	.86	--	.2
25..	1.4	22	.08	.95	--	.05	6.5	1600	A 28
26..	1.2	15	.05	.73	13	.03	18	2100	A 100
27..	.96	13	.03	.81	22	.05	3.7	52	S .59
28..	.89	12	.03	.79	13	.03	2.2	14	.08
29..	.76	11	.02	--	--	--	21	4100	A 230
30..	.65	12	.02	--	--	--	4.8	69	.89
31..	.55	--	1.2	--	--	--	2.6	25	.18
Total	48.85	--	73.66	33.94	--	16.42	99.57	--	493.25

S Computed by subdividing day.
T Less than 0.005 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

CUMBERLAND RIVER BASIN--Continued

3-4071. CANE BRANCH NEAR PARKERS LAKE, KY.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	1.9	18	0.09	0.58	7	0.01	0.08	8	T
2..	1.3	15	.05	.46	6	.01	.42	--	26
3..	1.1	13	.04	.36	6	.01	.21	--	.2
4..	.96	11	.03	.30	7	.01	.15	14	.01
5..	.82	10	.02	.26	7	T	.12	10	T
6..	1.7	303	S 1.99	.24	7	T	.27	--	10
7..	2.0	35	B .2	.20	5	T	2.6	1250	S 16.6
8..	1.7	9	.04	.19	5	T	.63	--	.11
9..	1.3	8	.03	.18	4	T	.26	13	.01
10..	1.1	7	.02	.15	3	T	.16	11	T
11..	.96	6	.02	.15	3	T	.46	956	S 3.81
12..	.76	6	.01	.14	5	T	.26	13	.01
13..	.61	7	.01	.12	4	T	.16	8	T
14..	.58	7	.01	.12	4	T	.10	8	T
15..	1.3	1960	S 21.9	.12	3	T	.15	14	.01
16..	.96	--	.3	.10	3	T	.15	12	T
17..	.85	8	.02	.12	3	T	.11	8	T
18..	.79	8	.02	.18	9	T	.08	8	T
19..	.85	--	.03	.15	9	T	.06	9	T
20..	.67	7	.01	.10	8	T	.06	8	T
21..	.61	8	.01	.10	6	T	.06	8	T
22..	.55	8	.01	.10	5	T	.06	8	T
23..	.46	5	.01	.10	3	T	.05	7	T
24..	.44	2	T	.10	4	T	.09	6	T
25..	1.8	1150	S 22.6	.32	1330	S 3.90	.06	3	T
26..	2.0	--	.4	.16	--	.05	.05	2	T
27..	1.4	16	.06	1.4	2820	S 49.8	.05	3	T
28..	1.1	11	.03	.30	74	.06	.06	3	T
29..	.82	8	.02	.15	13	.01	.06	4	T
30..	.70	7	.01	.10	12	T	.10	8	T
31..	--	--	--	.10	8	T	--	--	--
Total	32.09	--	47.99	7.15	--	5.39	7.13	--	56.79

Day	JULY			AUGUST			SEPTEMBER		
1..	0.06	8	T	0.05	7	T	0.02	5	T
2..	.04	8	T	.04	6	T	.02	5	T
3..	.04	11	T	.03	3	T	.02	5	T
4..	.04	7	T	.02	3	T	.02	7	T
5..	.04	5	T	.03	9	T	.02	7	T
6..	.03	4	T	.04	10	T	.02	6	T
7..	.03	7	T	.14	1160	S 3.25	.02	5	T
8..	.03	12	T	.10	--	.01	.02	5	T
9..	.03	12	T	.23	1800	A 1.1	.02	4	T
10..	.55	10700	A 16	.06	26	T	.02	4	T
11..	.10	--	.01	.04	5	T	.02	5	T
12..	.06	11	T	.04	5	T	.68	--	52
13..	.05	8	T	.04	5	T	.05	5	T
14..	.04	7	T	.03	5	T	.03	5	T
15..	.05	7	T	.02	5	T	.11	219	S .44
16..	.04	7	T	.02	5	T	.04	5	T
17..	.04	8	T	.02	5	T	.03	5	T
18..	.05	8	T	.02	5	T	.02	5	T
19..	.03	8	T	.05	18	T	.02	5	T
20..	.02	7	T	.04	5	T	.02	5	T
21..	.02	8	T	.05	5	T	.02	5	7
22..	.02	8	T	.04	5	7	.02	5	T
23..	3.6	6770	S 341	.04	5	T	.23	--	.6
24..	.12	--	.01	.04	5	T	.15	--	.2
25..	.47	--	25	.04	5	T	.04	--	.01
26..	.14	38	.01	.03	5	T	.03	43	T
27..	.10	15	T	.05	19	T	.02	23	T
28..	.06	13	T	.04	12	T	.02	15	T
29..	.05	12	T	.02	9	T	.02	11	T
30..	.04	12	T	.02	7	T	.05	8	T
31..	.04	7	T	.02	5	T	--	--	--
Total	6.03	--	382.06	1.45	--	4.38	1.82	--	53.26

Total discharge for year (cfs-days) 285.80
Total load for year (tons) 1199.76

S Computed by subdividing day.
T Less than 0.005 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

CUMBERLAND RIVER BASIN--Continued

3-4071. CANE BRANCH NEAR PARKERS LAKE, KY.--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Nov. 19, 1964	1530			4.4	3340		55	70	82	93	97	99	100	--				SBWC
Mar. 17, 1965	1145			8.0	40800		32	41	52	64	80	92	97	100				SBWC
Mar. 17	1145			8.0	a40800		--	--	1	7	84	91	96	100				SBN
May 25	2010			1.0	6680		52	69	61	93	99	99	100	--				SBWC
May 25	2010			1.0	6680		--	--	--	28	84	96	96	100				SBN

3-4073. HELTON BRANCH AT GREENWOOD, KY.

LOCATION.--At gaging station, 250 feet upstream from mouth at Little Hurricane Fork and 1 mile northeast of Greenwood, McCreary County.
DRAINAGE AREA.--0.85 square miles.
RECORDS AVAILABLE.--Chemical analyses: January 1956 to September 1959, May to September 1965.
Water temperatures: January to September 1956, unpublished; October 1956 to September 1958.
Sediment records: January 1956 to September 1957, unpublished; October 1957 to September 1958, August and September 1965.
EXTREMES, 1956-58, August to September 1965.--Sediment concentrations: Maximum daily, 90 ppm Nov. 18, 1957; minimum daily, 1 ppm on several days during 1958.
Sediment loads Maximum daily, 17,000 (revised) pounds Nov. 18, 1957; minimum daily, 1 pound on several days during 1958.
REMARKS.--Samples for iron and manganese were filtered clear when collected. Maximum daily load of 22,800 pounds Jan. 29, 1957, unpublished.

Chemical analyses, in parts per million, May to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
May 12, 1965	0.26	5.3	0.14	0.02	1.9	1.1	0.6	0.6	14	5.2	2.0	0.1	0.1	20	10	0	0.0	34	6.6	2
June 22	.16	--	.22	.03	--	--	--	--	14	4.0	2.0	.2	.3	25	13	2	--	35	7.0	--
June 22	.16	--	.15	.05	--	--	--	--	16	5.6	2.0	.2	.2	33	15	2	--	42	6.6	--
Aug. 26	.16	6.4	.25	.00	2.3	.4	.7	.8	10	2.0	2.0	.0	.2	24	8	0	.0	22	6.5	10
Aug. 28	.16	--	--	--	--	--	.7	--	--	2.0	--	--	--	38	8	--	.0	24	7.5	--
Sept. 4	.14	--	--	--	--	--	.7	--	8	2.4	--	--	--	30	7	1	--	29	6.4	--
Sept. 11	.16	--	--	--	--	--	.7	--	10	2.4	--	--	--	28	9	1	--	22	6.4	--
Sept. 18	.14	--	--	--	--	--	.7	--	10	.6	--	--	--	27	9	1	--	20	6.1	--
Sept. 26	.12	--	--	--	--	--	.7	--	8	1.6	--	--	--	26	7	1	--	19	6.1	--

CUMBERLAND RIVER BASIN--Continued

3-4073. *HELTON BRANCH AT GREENWOOD, KY.*--Continued

Suspended sediment, August to September 1965

Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Lbs per day		Mean concentration (ppm)	Lbs per day		Mean concentration (ppm)	Lbs per day
1..				--	--	--	0.14	10	8
2..				--	--	--	.14	10	8
3..				--	--	--	.14	10	8
4..				--	--	--	.14	10	8
5..				--	--	--	.14	9	7
6..				--	--	--	.14	9	7
7..				--	--	--	.14	9	7
8..				--	--	--	.14	9	7
9..				--	--	--	.14	8	6
10..				--	--	--	.14	8	6
11..				--	--	--	.16	7	6
12..				--	--	--	.40	--	E 120
13..				--	--	--	.16	9	8
14..				--	--	--	.14	9	7
15..				--	--	--	.23	10	12
16..				--	--	--	.16	10	9
17..				--	--	--	.14	10	8
18..				--	--	--	.14	10	8
19..				--	--	--	.14	10	8
20..				--	--	--	.14	10	8
21..				--	--	--	.14	10	8
22..				--	--	--	.14	10	8
23..				--	--	--	.35	9	17
24..				--	--	--	.28	6	9
25..				--	--	--	.18	5	5
26..				0.16	7	6	.14	4	3
27..				.16	7	6	.12	4	3
28..				.16	8	7	.12	4	3
29..				.16	9	8	.12	4	3
30..				.16	10	9	.16	4	3
31..				.16	11	9	--	--	--
Total				0.96	--	45	4.96	--	328

Total discharge for period (cfs-days)........ 5.92
Total load for period (tons)........ 0.2 (373 lbs.)

E Estimated.

CUMBERLAND RIVER BASIN--Continued

3-4141.1. CUMBERLAND RIVER NEAR BURKESVILLE, KY.

LOCATION.--At Neelys Ferry on State Highway 61, 0.5 mile downstream from Raft Creek, 3.2 miles south of Burkesville, Cumberland County, and about 37 miles downstream from gaging station near Rowena.
DRAINAGE AREA.--6,050 square miles.
RECORDS AVAILABLE.--Chemical analyses: January 1952 to September 1954.
Water temperatures: October 1949 to September 1951 (at Burkesville): January 1952 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 60°F Sept. 7-13; minimum, 48°F Feb. 24, to Mar. 9, Mar. 17-25, Mar. 30 to Apr. 5.
EXTREMES, 1949-65.--Water temperatures: Maximum, 84°F July 30, 1956; minimum, 34°F Feb. 2-4 1951, Jan. 22, 1956.
REMARKS.--Flow regulated by Lake Cumberland.

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0700 and 1500)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
0700.......	55	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
1500.......	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
November																																
0700.......	56	56	56	56	56	56	56	56	56	56	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	54	54	54	54	54	--	55
1500.......	56	56	56	56	56	56	56	56	56	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	54	54	54	54	54	--	55
December																																
0700.......	54	54	56	56	56	56	56	54	54	54	54	53	53	53	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55	55
1500.......	54	56	56	56	56	56	56	54	54	54	53	53	53	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55	55	55
January																																
0700.......	55	55	55	55	55	55	56	56	56	56	56	54	54	54	54	53	53	53	53	52	52	52	50	50	50	50	50	50	50	50	50	53
1500.......	55	55	55	55	55	56	56	56	56	56	56	54	54	54	53	53	53	53	53	52	52	52	50	50	50	50	50	50	50	50	50	53
February																																
0700.......	50	50	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	50	50	48	48	48	48	48	--	--	--	51
1500.......	50	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	50	50	48	48	48	48	48	--	--	--	51
March																																
0700.......	48	48	48	48	48	48	48	48	48	50	50	50	50	50	50	50	50	48	48	48	48	48	48	48	48	50	50	52	50	50	48	49
1500.......	48	48	48	48	48	48	48	48	50	50	50	50	50	50	50	50	48	48	48	48	48	48	48	48	50	50	50	52	50	48	48	49
April																																
0700.......	--	48	48	48	48	50	50	50	52	52	52	52	52	52	52	52	52	52	52	52	52	52	50	50	50	50	50	50	50	50	--	51
1500.......	48	48	48	48	50	50	50	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	50	50	50	50	50	50	50	50	--	51
May																																
0700.......	50	50	50	50	50	52	52	52	52	52	52	52	52	52	52	52	52	53	53	53	53	53	54	54	54	55	55	55	55	55	55	53
1500.......	50	50	50	50	50	52	52	52	52	52	52	52	52	52	52	52	53	53	53	53	53	54	54	54	55	55	55	55	55	55	56	53
June																																
0700.......	56	56	56	56	56	56	56	57	57	57	56	56	56	56	56	56	57	57	57	57	57	57	57	56	56	56	56	57	57	57	--	56
1500.......	56	56	56	56	56	56	57	57	57	56	56	56	56	56	56	57	57	57	57	57	57	57	56	56	56	56	56	57	57	57	--	56
July																																
0700.......	57	57	56	56	56	57	57	57	58	58	58	58	57	57	57	57	56	56	56	56	56	56	57	57	57	57	57	57	56	56	56	57
1500.......	57	56	56	56	56	57	57	57	58	58	58	58	57	57	57	57	56	56	56	56	56	57	57	57	57	57	57	56	56	56	56	57
August																																
0700.......	56	56	56	55	55	55	55	55	55	55	55	54	54	54	54	54	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56	55
1500.......	56	56	56	55	55	55	55	55	55	55	55	54	54	54	54	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56	56	55
September																																
0700.......	56	56	58	58	58	58	58	60	60	60	60	60	60	58	58	58	58	58	58	58	58	57	57	57	57	57	57	57	58	58	--	58
1500.......	56	58	58	58	58	58	60	60	60	60	60	60	60	58	58	58	58	58	58	58	58	57	57	57	57	57	57	58	58	58	--	58

CUMBERLAND RIVER BASIN--Continued

3-4385. CUMBERLAND RIVER AT SMITHLAND, KY.

LOCATION.--At stage station at bridge on U.S. Highway 60 at Smithland, Livingston County, 1 mile downstream from McCormick Creek, 2.8 miles upstream from mouth, and 27.7 miles downstream from gaging station near Grand Rivers.
DRAINAGE AREA.--17,913 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1950, October 1956 to December 1961.
Water temperatures: October 1949 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 83°F July 24-28; minimum, 38°F on Feb. 2, 3.
EXTREMES, 1949-65.--Water temperatures: Maximum, 90°F Aug. 3, 1955; minimum, freezing point Jan. 28, Feb. 3, 1963.
REMARKS.--Water temperatures may be effected by backwater from the Ohio River during periods of high flow. Discharge records near Grand Rivers and at Smithland considered equivalent. Regulation by navigation dams on Cumberland River, and by Great Falls Lake, Lake Cumberland, Dale Hollow Reservoir, Center Hill Reservoir, Old Hickory Lake and Lake Barkley.

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0700 and 1900)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
0700......	70	70	68	68	67	66	65	64	64	64	63	62	63	63	63	63	63	63	62	61	60	60	61	61	60	60	60	60	60	59	59	63
1900......	71	70	69	67	67	--	65	64	65	64	64	64	64	65	64	64	64	63	62	61	61	62	62	62	61	61	61	60	60	--	60	64
November																																
0700......	59	59	59	60	60	60	60	59	58	57	59	59	58	59	59	59	59	58	57	55	53	51	50	50	50	52	--	54	52	50	--	56
1900......	60	60	61	61	61	61	60	59	58	58	59	59	59	59	59	60	59	58	57	54	52	51	50	51	51	53	54	53	51	48	--	57
December																																
0700......	48	48	48	48	47	45	46	46	47	48	48	48	47	47	46	46	46	43	42	42	42	43	45	47	47	46	44	43	45	45	48	46
1900......	48	49	48	47	47	46	47	47	48	48	49	48	47	47	46	47	44	42	42	42	42	44	46	47	47	45	44	44	44	47	48	46
January																																
0700......	49	50	49	49	45	50	51	52	51	45	46	45	47	45	46	44	42	41	40	41	42	45	46	45	43	44	43	43	43	41	40	45
1900......	50	49	50	48	49	50	52	53	50	47	45	47	46	46	46	44	42	41	40	43	44	47	46	44	44	44	43	43	42	41	40	46
February																																
0700......	41	39	38	40	41	42	42	42	43	44	45	46	45	49	50	50	48	47	47	48	48	47	46	48	46	43	43	45	--	--	--	45
1900......	40	38	39	41	42	42	42	43	44	45	46	46	47	50	51	50	48	48	48	48	48	47	47	47	44	44	44	45	--	--	--	45
March																																
0700......	45	46	45	43	43	44	46	46	46	46	44	43	45	45	45	46	47	47	45	47	47	48	48	46	45	45	45	46	48	48	48	46
1900......	45	46	44	43	43	45	46	47	46	45	43	44	46	46	46	47	48	47	46	48	48	48	47	46	45	46	46	47	48	48	48	46
April																																
0700......	47	48	49	51	52	53	53	55	56	57	57	59	58	58	58	57	57	59	59	57	58	58	59	60	61	60	59	59	59	60	--	56
1900......	49	48	50	52	53	54	54	56	57	58	59	59	59	58	58	58	58	59	58	58	59	59	60	61	62	59	59	59	60	61	--	57
May																																
0700......	61	61	62	62	62	64	63	65	66	66	66	66	67	68	69	69	68	68	68	69	71	72	72	72	73	73	73	73	73	73	72	68
1900......	61	62	63	63	63	64	64	65	66	67	67	68	69	69	69	69	69	69	69	71	72	72	73	72	73	73	74	74	74	72	72	69
June																																
0700......	72	72	72	73	73	75	75	75	74	75	75	77	77	76	76	77	77	78	77	76	76	76	77	77	77	77	77	77	77	77	--	76
1900......	72	73	73	74	74	75	76	75	75	76	76	77	77	76	77	77	78	78	77	77	77	77	78	77	78	77	78	78	78	78	--	76
July																																
0700......	77	77	77	79	78	79	78	78	79	79	78	78	78	78	78	78	--	80	81	81	82	82	81	81	82	82	82	83	82	82	80	80
1900......	78	78	78	79	79	78	78	79	79	78	79	78	78	78	79	79	80	81	82	82	82	82	82	83	83	83	83	83	82	82	80	80
August																																
0700......	79	80	79	78	79	79	78	78	77	78	77	78	78	78	79	79	79	80	81	80	--	80	80	80	--	80	79	79	78	77	77	79
1900......	80	78	80	78	80	80	79	78	78	78	78	79	79	79	79	80	80	81	80	80	81	81	80	81	81	80	80	79	78	77	78	79
September																																
0700......	77	77	76	78	77	77	77	77	78	78	76	75	--	76	77	76	76	77	78	78	78	77	76	75	75	74	73	73	73	74	--	76
1900......	78	76	78	78	77	77	78	78	78	77	76	75	76	77	77	77	77	78	78	79	77	77	76	75	75	73	74	75	74	74	--	76

TENNESSEE RIVER BASIN

3-4390. FRENCH BROAD RIVER AT ROSMAN, N. C.

LOCATION.--At gaging station on left bank at upstream side of bridge on U.S. Highway 178 at Rosman, Transylvania County, 1 mile upstream from East Fork, and at mile 216.4.
DRAINAGE AREA.--67.9 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids		Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color
														Residue at 180°C	Calculated	Calcium, magnesium	Noncarbonate			
Oct. 15, 1964..	425	7.5	0.02	0.8	0.5	1.0	0.6	7	0.6	1.3	0.0	0.1	0.00	20	15	4	0	14	6.5	5
Nov. 10........	214	7.2	.10	1.4	.4	1.6	.5	8	1.4	1.5	.0	1.0	.00	29	19	5	0	20	6.2	--
Dec. 2.........	225	7.2	.03	1.1	.4	1.9	.8	9	1.2	2.9	.0	.2	.00	15	20	5	0	23	6.4	15
Jan. 5, 1965...	271	7.5	.01	1.2	.1	1.0	.4	8	1.6	1.5	.0	.2	.10	17	18	4	0	15	6.1	10
Feb. 1.........	227	7.7	.02	1.3	.3	1.3	.5	8	.6	1.9	.1	.2	.00	17	18	4	0	17	6.0	8
Mar. 2.........	1010	5.2	.02	1.1	.1	.9	.6	6	.8	.6	.1	.4	.00	20	13	4	0	13	6.1	10
Apr. 1.........	363	6.6	.13	.8	.4	1.0	.5	6	.8	1.3	.0	.1	.00	19	15	4	0	15	6.1	5
May 3..........	245	7.3	.06	1.4	.2	1.8	.7	8	.4	.3	.0	.2	.00	23	16	4	0	14	5.7	10
June 2.........	158	8.1	.15	1.6	.3	1.6	.6	8	.4	1.5	.0	.3	.10	--	19	5	0	21	6.4	10
July 1.........	144	8.3	.04	1.4	.4	1.0	.5	9	.8	.9	.0	.2	.00	25	18	5	0	14	5.9	20
Aug. 3.........	118	8.4	.00	1.5	.3	1.3	.6	8	1.8	1.2	.0	.1	.00	25	19	5	0	18	6.0	10
Sept. 1........	114	7.7	.05	1.5	.1	1.4	.7	9	.4	2.0	.0	.5	.07	23	18	4	0	18	5.7	20

TENNESSEE RIVER BASIN--Continued

3-4430. FRENCH BROAD RIVER AT BLANTYRE, N. C.

LOCATION.--At gaging station on left bank at upstream side of bridge on Secondary Road 1503, 700 feet east of Blantyre railroad station, Transylvania County, 3.5 miles downstream from Little River, and at mile 183.7.
DRAINAGE AREA.--296 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1953, October 1957 to September 1965.
Water temperatures: October 1952 to September 1953.

Chemical analyses, in parts per million, November 1964 to August 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color
Nov. 9, 1964...	993	8.0	0.07	3.7	0.3	12	0.8	16	18	2.7	0.1	0.1	0.10	63	54	10	0	76	6.2	35
Dec. 3.........	1050	8.0	.10	4.0	.6	12	.7	18	19	3.4	.0	.4	.00	63	57	12	0	76	6.4	30
Jan. 5, 1965...	1140	8.3	.02	3.0	.1	9.4	.5	11	17	2.7	.0	.4	.00	51	46	8	0	65	6.2	10
Feb. 5.........	878	8.3	.04	3.5	.3	15	.9	17	26	3.7	.0	.4	.00	71	66	10	0	99	6.8	25
Mar. 1.........	1560	7.4	.02	2.5	.5	7.7	.6	12	12	1.4	.1	.1	.00	48	38	8	0	55	6.1	18
Apr. 1.........	1540	7.2	.01	5.3	.6	7.1	.8	13	17	4.6	.0	.2	.00	49	49	16	5	67	6.8	5
May 5..........	980	8.2	.06	2.9	.6	11	.9	14	20	3.6	.2	.5	.00	63	55	10	0	74	6.4	35
June 3.........	743	9.0	.16	4.5	.1	14	1.0	21	16	5.3	.0	.7	.00	73	61	12	0	103	6.6	30
July 2.........	742	9.4	.10	6.1	.3	18	1.5	28	22	6.0	.0	.7	.10	90	78	16	0	134	6.8	30
Aug. 3.........	576	9.6	.16	4.7	.5	21	1.1	25	35	5.0	.2	.9	.10	106	90	30	10	139	6.2	50
Aug. 31........	513	8.6	.09	7.5	1.0	22	1.0	30	38	6.8	.1	.8	.08	111	101	23	0	165	6.7	50

TENNESSEE RIVER BASIN--Continued

3-4480. FRENCH BROAD RIVER AT BENT CREEK, N. C.

LOCATION.--At gaging station on left bank, 50 feet downstream from Bent Creek, 6.2 miles upstream from Hominy Creek, 6.7 miles south of Asheville, Buncombe County, and at mile 157.7.
DRAINAGE AREA.--676 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Non-carbonate	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 27, 1964..	2060	8.7	0.00	1.6	0.7	1.8	0.6	10	2.8	2.1	0.0	0.4	0.00	24	24	7	0	22	6.9	8
Nov. 13........	1510	9.0	.01	1.7	.5	2.9	.5	11	2.6	1.0	.0	.4	.00	31	24	6	0	26	7.0	6
Dec. 9.........	1740	7.9	.08	1.8	.6	2.8	.6	13	3.0	1.5	.0	.2	.00	23	24	7	0	29	6.6	20
Jan. 14, 1965..	1690	8.6	.01	2.0	.4	4.6	.5	12	6.0	1.9	.0	.4	.00	32	30	7	0	37	6.4	8
Feb. 16........	2500	7.8	.02	1.1	.4	1.1	.4	8	1.4	1.3	.0	.3	.00	18	18	5	0	17	6.3	8
Mar. 17........	1980	7.9	.02	1.5	.2	1.1	.5	7	1.6	.9	.0	.3	.00	18	17	5	0	18	6.5	10
Apr. 12........	1920	7.4	.00	1.1	.8	2.1	.5	10	2.8	1.1	.0	.1	.00	21	21	6	0	32	6.4	10
May 24.........	2290	8.0	.10	2.4	.1	1.5	.5	9	1.2	1.5	.1	.4	.10	20	20	6	0	22	5.8	10
June 22........	1560	9.1	.04	2.6	.1	3.1	.8	13	4.0	1.2	.0	.3	.00	30	27	7	0	35	6.2	10
July 26........	1200	8.9	.04	2.7	.6	4.5	.8	15	8.4	2.5	.2	.2	.00	40	36	10	0	46	6.7	10
Aug. 18........	782	9.6	.02	4.3	.6	9.7	.8	20	14	3.3	.0	.2	.06	56	53	14	0	76	6.3	20
Sept. 14.......	845	8.6	.07	4.6	.2	13	1.4	23	14	4.5	.2	.7	.08	63	58	12	0	90	6.1	30
Sept. 30.......	863	8.6	.03	3.9	.3	11	1.1	22	14	3.1	.0	.6	.01	54	54	12	0	81	6.5	20

TENNESSEE RIVER BASIN--Continued

3-4515. FRENCH BROAD RIVER AT ASHEVILLE, N. C.

LOCATION.--At gaging station on right bank at downstream side of Pearson Bridge at Asheville, Buncombe County, 2.3 miles downstream from Southern Railway Station, 3.2 miles downstream from Swannanoa River, and at mile 145.8.
DRAINAGE AREA.--945 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951, October 1956 to September 1965.
Water temperatures: October 1950 to September 1951.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 27, 1964..	2340	8.6	0.00	2.8	1.2	12	1.4	21	17	6.2	0.0	0.3	0.10	64	60	12	0	100	6.4	10
Nov. 13........	1760	10	.02	3.8	.8	14	1.3	22	17	5.9	.1	.3	.00	72	64	12	0	95	6.9	15
Dec. 10........	1960	8.7	.12	3.4	1.2	12	1.2	21	16	5.1	.0	.1	.10	64	58	14	0	100	6.5	25
Jan. 13, 1965..	2120	9.3	.02	3.8	.8	14	1.1	24	20	4.4	.1	.0	.00	67	66	13	0	90	6.0	17
Feb. 17........	2920	8.4	.01	3.0	.9	8.9	1.0	17	12	4.5	.1	.4	.10	52	47	11	0	79	6.4	20
Mar. 17........	2320	9.0	.05	3.3	1.0	10	1.1	20	14	3.2	.1	.9	.30	58	53	12	0	78	6.4	15
Apr. 12........	2390	8.9	.03	3.0	1.2	13	1.4	22	17	6.0	.1	.2	.00	64	62	12	0	84	6.7	15
May 24.........	2840	8.6	.24	3.4	.6	5.1	1.0	16	7.8	2.7	.1	.3	.10	43	38	11	0	57	6.5	7
June 22........	1810	9.6	.02	3.9	1.1	11	1.5	22	16	5.0	.0	1.0	.30	63	60	15	0	94	6.4	20
July 27........	1860	9.2	.18	4.6	1.2	14	2.2	25	18	5.8	.0	.5	.10	78	68	17	0	116	6.2	40
Aug. 18........	942	9.9	.01	5.8	1.2	24	1.7	27	35	8.6	.0	.7	.10	107	100	20	0	155	6.8	20
Sept. 15.......	878	9.2	.04	5.6	1.0	22	1.6	27	22	10	.1	.4	.07	99	85	18	0	148	6.0	20

TENNESSEE RIVER BASIN--Continued

3-4535. FRENCH BROAD RIVER AT MARSHALL, N. C.

LOCATION.--At gaging station on right bank, 0.7 mile upstream from Hayes Creek, 1 mile downstream from Ivy River, 1.5 miles southeast of Marshall, Madison County, and at mile 126.7.
DRAINAGE AREA.--1,332 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1956 to September 1965.
Water temperatures: October 1957 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 116 ppm Sept. 1-21; minimum, 38 ppm Oct. 1-10.
Hardness: Maximum, 22 ppm Sept. 1-21; minimum, 12 ppm Oct. 1-10.
Specific conductance: Maximum daily, 189 micromhos Sept. 7; minimum daily, 40 micromhos Oct. 6.
Water temperatures: Maximum, 81°F July 11-14, 19; minimum, 33°F Feb. 2-4.
EXTREMES, 1957-65.--Dissolved solids: Maximum, 148 ppm Oct. 4-31, 1963; minimum, 37 ppm Mar. 7-10, 1963.
Hardness: Maximum, 28 ppm Nov. 1-25, 1963; minimum, 12 ppm on many days during 1958-65.
Specific conductance: Maximum daily, 270 micromhos Oct. 24, 31, 1963; minimum daily, 39 micromhos Mar. 31, 1960.
Water temperatures: Maximum, 83°F Aug. 8, 1964; minimum, freezing point on many days during 1958-64.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Non-carbonate	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 1-10, 1964	15446	7.9	0.05	3.0	1.1	5.2	1.4	13	8.6	2.3	0.0	2.2	0.20	41	38	12	2	56	6.6	27
Oct. 11-31.....	4709	11	.02	4.2	1.0	8.9	1.3	17	13	4.1	.1	2.2	.30	57	54	14	0	81	6.6	10
Nov. 1-22......	2197	12	.05	4.6	1.3	14	2.0	20	22	6.0	.0	3.7	.40	77	76	17	0	110	6.6	10
Nov. 23-30.....	4248	9.4	.01	3.8	1.0	5.8	1.3	14	12	2.9	.0	2.8	.10	52	46	14	2	64	6.5	15
Dec. 1-31......	3401	11	.06	3.9	1.2	9.0	1.3	17	14	3.7	.0	3.3	.60	65	56	15	1	88	6.5	28
Jan. 1-31, 1965	2781	11	.04	4.3	1.0	9.5	1.3	17	16	3.5	.0	2.9	.20	58	58	15	1	76	6.7	10
Feb. 1-28......	3945	9.8	.02	3.8	.9	8.2	1.2	14	15	3.2	.0	2.6	.20	49	52	14	2	70	6.6	8
Mar. 1-31......	4887	11	.03	3.2	1.2	7.2	1.4	15	11	3.6	.1	2.8	.30	55	49	13	0	64	6.9	15
Apr. 1-30......	3548	12	.05	4.0	1.4	8.0	1.6	19	13	4.3	.2	3.0	.24	62	57	16	0	84	6.8	5
May 1-31.......	2822	11	.01	4.9	.8	10	1.9	21	16	4.4	.2	1.7	.10	64	61	16	0	84	6.9	10
June 1-11......	2055	12	.11	5.1	1.5	13	1.9	21	20	5.0	.0	3.5	.30	84	72	19	2	120	7.1	40
June 12-23.....	3392	11	.07	4.6	.9	7.6	1.3	16	15	3.0	.1	1.7	.10	57	53	16	2	71	7.1	20
June 24-30.....	1923	12	.12	5.1	1.5	14	1.7	22	24	4.6	.0	3.1	.30	81	77	19	1	120	6.4	20
July 1-31......	1813	12	.14	5.2	1.4	19	2.8	23	28	6.5	.2	3.7	.30	95	90	19	0	126	6.8	30
Aug. 1-31......	1555	11	.12	5.5	1.6	18	1.4	23	32	5.5	.2	2.3	.29	93	89	20	2	134	6.6	30
Sept. 1-21.....	1107	12	.13	6.3	1.4	22	1.8	27	36	5.6	.1	2.6	.62	116	102	22	0	159	6.5	30
Sept. 22-30....	1975	10	.06	5.5	1.8	16	1.7	21	27	4.2	.0	2.6	.31	84	79	21	4	121	6.5	20
Time-weighted average.....	3302	11	0.06	4.5	1.2	12	1.6	19	19	4.4	0.1	2.8	0.30	70	--	16	1	95	--	18

TENNESSEE RIVER BASIN--Continued

3-4535. FRENCH BROAD RIVER AT MARSHALL, N. C.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	60	105	--	70	88	62	66	72	105	121	156	177
2.....	56	105	88	64	87	62	--	87	105	144	156	--
3.....	61	105	88	64	88	58	64	90	105	161	160	177
4.....	61	105	89	74	96	59	73	90	105	161	155	165
5.....	42	105	87	81	86	59	71	90	105	153	158	173
6.....	40	110	83	78	82	60	65	90	130	121	--	173
7.....	61	105	87	84	50	59	73	92	120	121	142	189
8.....	63	105	--	81	50	60	75	87	150	121	139	--
9.....	62	93	90	85	50	70	72	76	115	127	139	182
10.....	65	96	100	88	59	71	68	82	120	127	142	134
11.....	78	96	95	78	76	71	75	81	120	127	144	134
12.....	69	115	100	77	62	75	71	86	63	113	156	134
13.....	63	110	84	76	59	72	72	100	61	113	148	173
14.....	87	110	97	93	59	72	72	86	63	145	145	177
15.....	73	110	87	88	59	68	75	87	63	145	145	177
16.....	72	110	87	96	80	69	74	100	60	145	144	169
17.....	84	110	115	92	76	68	71	100	61	145	123	171
18.....	87	130	--	86	76	82	85	100	82	145	118	166
19.....	76	130	92	93	76	72	91	105	80	145	121	160
20.....	85	130	97	79	76	70	83	100	78	142	126	160
21.....	82	120	90	75	76	72	86	100	83	142	119	84
22.....	81	110	98	83	76	73	83	75	80	148	119	84
23.....	84	--	80	74	77	57	85	89	82	160	145	84
24.....	87	62	79	83	86	52	92	85	125	152	110	--
25.....	85	54	75	75	50	50	85	80	120	147	108	--
26.....	92	59	65	90	56	58	96	81	120	147	106	77
27.....	99	57	60	78	52	53	75	75	120	132	106	77
28.....	99	72	62	80	51	58	96	80	120	131	105	78
29.....	--	68	80	84	--	61	73	84	120	129	118	78
30.....	100	76	70	85	--	58	70	85	120	129	129	78
31.....	--	--	--	89	--	56	--	--	--	129	--	--
Average	74	98	86	81	69	64	77	87	99	137	133	139

TENNESSEE RIVER BASIN--Continued

3-4535. FRENCH BROAD RIVER AT MARSHALL, N. C.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement, between 0600 and 1815)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	63	62	64	60	59	58	58	55	58	56	51	52	53	53	54	52	53	49	48	49	50	49	50	48	49	52	51	53	--	50	--	54
November	51	50	52	53	53	53	53	53	54	52	53	54	54	55	54	53	52	52	49	49	46	44	--	46	47	48	48	45	45	45	--	50
December	--	44	45	45	44	44	45	--	46	49	49	49	47	44	40	40	40	--	38	39	39	40	42	42	42	44	47	46	45	45	--	44
January	40	39	38	38	42	44	44	45	50	47	49	48	48	46	45	47	40	37	35	39	40	43	46	48	46	45	46	42	40	37	35	43
February	36	33	33	33	36	38	40	41	42	42	42	40	42	43	44	45	44	43	42	42	42	43	43	44	41	40	40	42	--	--	--	41
March	46	48	47	44	43	43	44	42	43	43	44	43	44	45	44	44	42	42	41	40	40	41	42	44	47	48	50	51	48	54	55	45
April	55	--	57	56	57	58	58	58	61	60	58	59	60	59	60	60	60	61	62	62	62	63	64	64	64	63	63	63	64	59	--	60
May	58	60	62	62	68	65	67	67	69	67	68	68	68	70	70	70	70	70	71	72	--	70	70	70	69	67	66	68	68	69	65	67
June	71	70	71	72	73	71	72	72	72	72	73	73	70	72	70	69	67	69	70	70	70	71	70	70	70	71	71	72	72	72	--	71
July	71	70	71	72	75	78	78	77	78	79	81	81	81	81	80	80	80	80	81	80	79	78	78	79	78	78	78	78	79	76	80	78
August	76	77	77	76	77	--	78	77	79	77	77	76	76	79	78	78	75	77	77	76	75	75	74	75	75	76	75	77	75	76	--	76
September	--	70	--	72	75	76	76	75	--	76	73	72	70	76	74	74	74	73	72	70	72	70	70	68	--	--	64	65	65	65	--	71

TENNESSEE RIVER BASIN--Continued

3-4545. *FRENCH BROAD RIVER AT HOT SPRINGS, N. C.*

LOCATION.--At Hot Springs, Madison County, at bridge on U.S. Highways 25 and 70, and 0.2 mile upstream from Spring Creek.
DRAINAGE AREA.--1,567 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1957 to September 1965.
Water temperatures: October 1945 to September 1946.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phcsphate (PO_4)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 15, 1964..		9.5	0.02	3.0	1.9	7.9	1.2	17	16	4.3	0.2	0.1	0.00	54	52	16	2	69	6.2	5
Nov. 17........		9.7	.08	4.0	1.3	11	1.2	17	18	3.5	.0	1.1	.10	64	58	15	1	83	6.5	30
Dec. 16........		10	.01	4.2	1.8	7.5	1.0	19	15	2.3	.1	.4	.00	56	51	18	2	71	6.2	8
Jan. 15, 1965..		10	.02	3.4	1.1	11	1.0	21	16	3.0	.1	.6	.00	58	56	13	0	77	6.3	10
Feb. 17........		9.4	.01	3.0	1.2	6.6	1.0	16	11	3.0	.1	.2	.10	50	44	12	0	62	6.0	10
Mar. 16........		9.6	.02	3.3	1.0	6.6	1.0	14	14	2.2	.1	.4	.00	49	45	12	0	62	6.3	5
Apr. 16........		10	.02	2.7	1.6	6.5	1.3	17	13	3.4	.1	.2	.00	47	47	14	0	59	6.4	10
May 15.........		10	.03	3.5	1.0	9.6	1.1	20	15	3.5	.1	.3	.00	54	54	13	0	81	6.4	10
June 15........		9.7	.03	3.8	1.7	6.5	1.4	18	13	2.5	.0	.4	.00	49	48	16	2	68	6.6	10
July 16........		11	.08	4.9	1.2	14	1.9	24	23	6.5	.1	.2	.00	82	75	17	0	124	6.2	10
Aug. 17........		11	.09	5.8	1.7	17	1.9	18	29	4.0	.2	.5	.30	--	80	22	6	134	6.4	30
Sept. 16.......		10	.05	5.8	1.2	18	1.8	29	31	5.4	.1	.5	.05	91	88	20	0	139	6.2	20

TENNESSEE RIVER BASIN--Continued

3-4570. PIGEON RIVER AT CANTON, N. C.

LOCATION.--At gaging station on left bank,100 feet upstream from small tributary, 200 feet downstream from Pigeon Street bridge, 0.5 mile upstream from U.S. Highways 19 and 23 at Canton, Haywood County, and at mile 64.1.
DRAINAGE AREA.--133 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 22, 1964..	397	7.9	0.02	1.9	0.6	1.4	0.8	11	2.2	1.8	0.0	0.2	0.00	22	22	8	0	21	6.4	8
Nov. 5.........	219	7.2	.04	1.9	.6	1.7	.7	12	1.4	2.3	.0	.1	.00	25	22	8	0	26	6.5	10
Dec. 3.........	254	7.4	.01	2.1	.3	1.1	.6	10	1.2	.9	.0	.0	.00	22	19	6	0	20	6.3	7
Jan. 5, 1965...	325	7.4	.00	1.8	.5	1.2	.4	9	1.8	.5	.0	.6	.00	22	18	6	0	19	--	3
Feb. 4.........	273	7.6	.02	1.6	.6	.9	.5	9	1.4	1.2	.0	.0	.00	23	18	6	0	18	6.2	7
Mar. 2.........	428	6.8	.01	1.8	.3	1.0	.5	7	2.0	1.5	.1	.1	.00	19	17	6	0	18	6.7	7
Apr. 6.........	464	7.0	.01	1.8	.6	1.5	.6	8	1.2	1.0	.0	.3	.00	23	18	7	0	24	6.2	10
May 4..........	278	7.3	.04	2.3	.2	1.2	.4	12	1.2	1.4	.1	.2	.00	23	20	7	0	19	6.2	10
June 7.........	191	7.8	.04	2.1	.3	1.3	.6	11	1.0	.9	.0	.2	.10	29	19	6	0	22	6.2	25
July 1.........	174	7.6	.08	1.9	.6	1.7	.8	11	3.2	1.7	.1	.2	.00	27	23	8	0	25	6.4	10
Aug. 2.........	93	7.6	.02	2.3	.3	1.4	.8	12	.8	1.0	.0	.4	.00	21	21	8	0	23	6.6	10
Sept. 2........	82	7.4	.05	2.5	.5	1.6	.8	11	2.0	2.0	.0	.3	.04	28	22	8	0	27	6.1	20

TENNESSEE RIVER BASIN--Continued

3-4595. PIGEON RIVER NEAR HEPCO, N. C.

LOCATION.--At gaging station on left bank, 0.8 mile downstream from Jonathan Creek, 2.0 miles south of Hepco, Haywood County, 2.4 miles upstream from Fines Creek, and at mile 45.1.
DRAINAGE AREA.--350 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1956, October 1957 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phcsphate (PO_4)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 21, 1964..	830	9.2	0.05	21	0.9	24	1.8	35	18	46	0.2	1.0	0.00	159	139	57	28	270	6.7	100
Nov. 9.........	502	10	.14	31	.9	42	2.4	35	23	88	.3	.7	.10	306	216	81	52	386	6.9	180
Dec. 3.........	522	8.6	.24	27	1.5	44	2.0	45	17	74	.4	1.3	.00	247	198	73	36	324	6.3	160
Jan. 6, 1965...	854	9.3	.05	17	1.2	23	1.5	24	14	45	.3	1.5	.00	149	125	46	27	216	6.3	70
Feb. 5.........	598	9.7	.12	28	1.0	32	1.6	37	22	65	.3	.5	.00	214	178	73	42	310	6.3	150
Mar. 5.........	943	8.2	.07	18	.6	19	1.2	26	12	40	.1	.9	.00	143	113	47	26	208	6.3	100
Apr. 7.........	1500	8.8	.03	12	1.0	15	1.6	23	13	28	.2	.5	.00	107	91	34	16	180	6.4	50
May 3..........	714	9.2	.01	26	.5	30	1.7	24	2.4	64	.3	.6	.00	219	168	68	0	310	6.5	60
June 8.........	615	10	.43	25	1.4	33	2.9	32	16	75	.2	.8	.10	231	181	69	43	365	6.0	50
July 6.........	357	11	.09	47	1.6	48	3.4	66	25	111	.3	1.0	.00	360	280	124	70	515	6.7	130
Aug. 4.........	219	12	.37	63	2.8	86	4.7	66	23	200	.5	1.6	.50	568	426	168	114	806	6.5	250
Sept. 3........	191	12	.00	94	1.1	130	5.9	133	24	256	.5	1.1	.15	740	590	240	130	1127	6.8	300

TENNESSEE RIVER BASIN--Continued

3-4600. CATALOOCHEE CREEK NEAR CATALOOCHEE, N. C.

LOCATION.--At gaging station on left bank at bridge on State Highway 284, 500 feet upstream from Little Cataloochee Creek, and 2 miles north of Cataloochee, Haywood County.
DRAINAGE AREA.--49.2 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1965.
Water temperatures: October 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 67°F July 24, Aug. 15, 16; minimum, 33°F on several days during January to March.
EXTREMES, 1962-64.--Water temperatures: Maximum, 69°F June 22, 1964; minimum, freezing point on several days in 1963-64.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 21, 1964..	130	7.2	0.00	1.2	0.1	1.1	0.5	6	0.2	0.5	0.0	0.2	0.00	21	14	4	0	16	6.3	15
Nov. 6.........	60	8.0	.00	1.4	.1	1.2	.6	8	1.2	.7	.0	.2	.00	24	17	4	0	15	6.3	8
Dec. 2.........	111	6.9	.02	1.3	.3	1.0	.5	8	1.2	1.1	.0	.1	.00	19	16	4	0	18	6.4	15
Jan. 6, 1965...	142	7.4	.01	1.1	.2	1.4	.5	7	.8	.7	.0	.5	.00	21	16	4	0	15	6.5	7
Feb. 5.........	117	8.0	.01	1.0	.3	1.2	.4	7	.8	.5	.0	.6	.00	19	16	4	0	14	6.4	7
Mar. 5.........	143	7.3	.01	1.1	.1	1.0	.5	6	.8	.9	.0	.4	.00	21	15	4	0	13	6.4	7
Mar. 31........	355	6.4	.00	.6	.2	1.0	.5	6	.4	.5	.0	.2	.00	17	13	2	0	15	6.0	5
May 3..........	99	7.8	.02	1.1	.1	1.2	.2	8	.4	.6	.0	.2	.00	15	16	4	0	13	6.3	10
June 8.........	103	7.9	.07	1.2	.4	1.0	.5	8	2.0	1.0	.0	1.5	.00	22	20	4	0	16	6.2	10
July 6.........	63	8.4	.08	1.4	.2	1.2	.5	8	1.8	1.5	.0	.5	.00	25	20	4	0	18	6.4	30
Aug. 4.........	38	9.0	.01	1.6	.8	1.2	.8	10	1.6	.5	.0	.6	.00	21	21	7	2	16	6.5	10
Sept. 3........	38	8.2	.04	1.4	.2	1.2	.6	9	1.2	1.3	.1	.4	.05	20	19	4	0	16	6.2	15

TENNESSEE RIVER BASIN--Continued

3-4600. CATALOOCHEE CREEK NEAR CATALOOCHEE, N. C.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	59	60	61	60	56	51	48	48	49	48	47	48	49	49	50	50	52	52	52	47	46	50	48	46	46	47	48	50	52	51	51	51
Miuimum	58	58	59	56	51	48	45	45	46	46	43	44	45	47	49	50	50	49	47	44	41	46	45	43	43	43	44	46	50	48	48	48
November																																
Maximum	52	50	48	48	49	48	48	49	49	48	47	49	52	50	47	50	51	53	53	53	45	40	40	43	47	47	45	47	47	43	--	48
Minimum	50	46	45	45	46	45	44	48	47	44	44	44	48	45	44	46	50	51	52	45	40	36	36	40	43	45	43	44	43	37	--	45
December																																
Maximum	37	38	44	48	47	45	39	38	38	40	45	48	46	44	40	38	44	44	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	34	35	38	44	45	39	37	34	37	38	40	45	43	40	37	36	38	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
January																																
Maximum	--	--	--	--	--	42	43	45	47	47	44	41	42	42	38	38	36	35	34	36	38	40	42	45	43	44	43	37	39	38	36	41
Minimum	--	--	--	--	--	34	40	43	41	40	41	40	40	38	37	36	34	34	34	34	36	37	39	42	40	40	37	34	36	36	33	38
February																																
Maximum	33	33	34	34	34	35	39	42	44	47	48	47	46	41	38	39	40	41	41	39	40	40	38	39	40	36	38	41	--	--	--	40
Minimum	33	33	33	34	33	34	35	39	41	44	46	46	41	38	35	37	39	38	38	35	37	34	33	37	34	33	33	37	--	--	--	37
March																																
Maximum	42	43	45	46	43	38	37	39	40	40	38	38	40	40	42	42	44	46	44	40	36	38	44	43	45	46	47	49	48	49	47	43
Minimum	38	42	43	43	38	36	36	37	36	36	34	35	36	36	37	36	40	41	40	35	33	33	36	42	43	45	44	45	48	47	46	39
April																																
Maximum	48	49	46	50	53	52	53	52	57	54	57	58	54	50	54	53	53	56	53	57	56	59	60	58	60	60	59	56	52	55	--	54
Minimum	43	46	42	45	47	50	50	49	51	49	51	54	50	45	49	50	45	47	50	52	48	51	53	53	54	56	56	52	50	47	--	50
May																																
Maximum	57	59	59	60	58	60	60	58	59	59	58	58	58	58	59	60	59	59	61	59	60	57	58	59	58	60	59	59	59	56	57	59
Minimum	49	51	51	52	53	54	54	55	56	55	56	56	52	52	53	55	57	58	57	57	56	56	56	56	56	57	58	56	56	52	52	55
June																																
Maximum	58	58	60	60	59	60	59	60	62	60	60	61	64	61	59	59	58	57	57	58	60	59	60	59	63	64	61	62	62	64	--	60
Minimum	54	54	57	58	58	57	57	57	58	58	59	59	59	59	58	58	57	54	52	52	54	56	57	57	58	58	59	57	58	60	--	57
July																																
Maximum	64	63	62	62	63	63	63	64	63	63	64	64	64	64	63	65	64	62	62	64	66	63	65	67	66	64	63	64	63	64	64	64
Minimum	60	59	60	59	60	60	59	61	60	60	61	60	60	60	61	60	59	60	60	60	61	60	61	61	62	62	62	61	60	60	59	60
August																																
Maximum	63	62	61	62	63	62	64	63	64	64	64	64	64	65	67	67	64	64	66	65	65	65	65	64	64	65	65	65	65	63	64	64
Minimum	59	59	56	57	57	58	59	61	60	59	59	61	61	61	63	63	61	62	63	62	63	63	63	63	63	62	62	63	61	58	58	61
September																																
Maximum	62	62	61	63	61	64	63	62	62	64	64	63	63	65	64	63	64	63	63	63	64	62	63	62	59	56	57	57	58	57	--	62
Minimum	59	60	59	59	59	60	58	56	57	60	61	62	62	61	61	61	61	60	60	60	59	59	61	59	55	52	54	54	54	56	--	59

TENNESSEE RIVER BASIN--Continued

3-4607.66. PIGEON RIVER AT WATERVILLE, N. C.

LOCATION.--From tailrace of Carolina Power and Light powerplant, about 7 miles below Waterville Lake at Waterville, Haywood County.
DRAINAGE AREA.--536 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 20, 1964..		8.3	0.04	11	1.0	13	1.8	28	10	22	0.2	0.3	0.00	85	82	32	8	140	7.3	32
Nov. 17........		9.1	.30	25	1.8	40	2.3	44	19	66	.3	2.3	.00	231	188	71	35	310	6.5	160
Dec. 15........		8.0	.73	16	1.5	24	1.8	37	13	40	.2	.9	.10	150	124	47	16	215	6.5	140
Jan. 25, 1965..		9.5	.14	20	.7	23	1.7	50	17	41	.1	.4	.00	153	143	54	13	242	6.7	110
Feb. 15........		8.3	.08	12	.7	14	1.2	30	10	23	.1	.6	.00	94	85	34	10	150	6.4	50
Mar. 16........		9.1	.25	18	.9	22	.6	35	14	40	.1	.7	.10	142	123	50	21	222	6.6	110
Apr. 22........		8.3	.09	12	1.4	16	1.6	25	12	30	.0	.7	.00	112	94	36	15	177	6.8	50
May 22.........		8.5	.08	21	1.8	30	2.1	38	19	56	.2	1.0	.00	189	159	60	29	297	6.8	100
June 12........		10	.11	21	1.0	28	2.7	40	15	51	.1	1.0	.00	179	150	55	22	287	6.3	65
July 21........		10	.12	31	1.9	37	3.4	50	15	80	.3	1.2	.00	256	205	86	46	397	6.8	70
Aug. 18........		11	.37	40	1.6	46	3.4	54	51	72	.3	.8	.10	336	254	105	60	455	6.6	120
Sept. 13.......		11	.05	52	1.7	58	3.7	66	23	131	.2	.2	.01	363	313	138	84	576	7.3	80

TENNESSEE RIVER BASIN--Continued

3-4633. SOUTH TOE RIVER NEAR CELO, N. C.

LOCATION.--Temperature recorder at gaging station on right bank,800 feet upstream from bridge on Secondary Road 1169, 0.3 mile downstream from Whiteoak Creek, 1.9 miles southeast of Celo, Yancey County, and at mile 20.1.
DRAINAGE AREA.--43.4 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1958 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 77°F Aug. 19; minimum, 33°F Jan. 19, 20 and Feb. 4.
EXTREMES, 1958-65.--Water temperatures: Maximum, 78°F Aug. 1, 1961; minimum, freezing point on many days during 1958-60 and 1963-64.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (calculated)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color
														Calcium, magnesium	Noncarbonate			
Dec. 9, 1964.........	92	6.0	0.01	1.0	0.4	0.8	0.3	6	0.6	0.2	0.1	0.3	13	4	0	13	6.4	5
May 12, 1965.........	136	5.6	.03	.9	.4	.8	.6	5	.4	1.3	.0	.3	12	4	0	14	6.8	10

TENNESSEE RIVER BASIN--Continued

3-4633. SOUTH TOE RIVER NEAR CELO, N. C.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	57	59	60	59	56	52	51	51	51	51	49	50	50	50	50	49	52	54	53	48	49	53	50	48	48	49	49	50	53	53	54	52
Minimum	56	56	57	56	51	48	46	46	46	47	44	44	44	46	49	48	49	50	48	46	44	48	46	43	43	43	44	45	50	48	51	48
November																																
Maximum	54	50	50	50	50	50	49	50	50	48	49	48	53	49	48	52	53	54	55	55	47	41	40	43	47	47	46	47	47	43	--	49
Minimum	50	45	45	45	45	47	44	48	46	44	44	44	47	45	44	46	52	53	53	47	41	36	36	39	43	44	42	45	43	37	--	45
December																																
Maximum	37	39	46	49	48	45	40	38	41	40	45	47	46	45	40	38	44	44	37	42	42	42	42	48	48	49	49	46	44	46	46	44
Minimum	34	35	39	46	45	40	36	35	38	38	40	45	45	40	36	36	38	37	34	36	40	39	40	42	46	48	46	44	41	41	45	40
January																																
Maximum	46	48	47	40	41	43	43	45	48	48	44	41	41	41	39	38	35	35	34	36	39	41	44	46	44	47	45	40	41	41	39	42
Minimum	45	43	39	37	38	41	40	42	44	44	41	38	38	38	36	35	34	34	33	33	36	37	41	44	41	41	38	35	38	39	35	39
February																																
Maximum	36	36	35	36	35	39	41	45	45	49	50	50	49	45	43	43	44	46	46	44	44	44	41	41	40	37	43	45	--	--	--	43
Minimum	34	34	34	33	34	35	38	41	43	45	47	48	44	41	38	39	42	41	42	38	39	36	36	40	36	35	35	39	--	--	--	39
March																																
Maximum	46	46	47	47	44	42	42	42	46	45	43	42	44	45	47	49	48	52	50	47	43	45	49	49	49	47	50	51	50	54	51	47
Minimum	40	44	44	44	40	39	39	40	39	39	37	39	39	39	40	41	45	44	43	41	35	36	40	48	47	46	45	45	49	48	46	42
April																																
Maximum	49	53	49	53	54	53	55	53	60	57	57	61	57	55	56	55	57	59	56	56	59	60	63	62	61	61	60	58	56	59	--	57
Minimum	45	46	44	45	48	50	51	49	52	50	51	54	50	47	50	50	47	48	52	51	50	51	54	55	56	56	55	52	49	48	--	50
May																																
Maximum	62	63	63	64	61	62	60	60	60	62	61	62	63	62	60	61	63	62	65	63	58	59	63	61	62	63	61	64	65	62	61	62
Minimum	51	52	52	54	55	55	57	56	56	56	57	57	54	54	55	56	58	59	58	58	57	57	56	56	57	57	58	58	59	55	55	56
June																																
Maximum	62	63	65	63	63	66	63	64	64	64	63	63	67	64	62	57	58	60	61	63	64	62	61	61	61	63	65	65	67	66	--	63
Minimum	56	57	60	58	57	58	60	59	59	60	60	60	59	59	57	56	57	54	52	54	55	57	58	58	59	58	59	59	61	62	--	58
July																																
Maximum	68	67	65	65	67	70	67	69	70	68	68	66	70	68	67	70	71	70	67	69	71	70	70	73	71	70	68	71	68	69	72	69
Minimum	61	62	62	61	62	62	63	64	64	65	63	63	63	63	64	63	63	63	64	64	64	64	64	65	67	66	66	65	64	64	64	64
August																																
Maximum	70	70	70	71	71	69	68	72	70	72	69	70	70	73	75	76	75	75	77	72	69	67	67	68	67	70	70	68	68	66	65	70
Minimum	65	65	62	63	63	63	63	66	65	65	63	63	65	66	67	68	68	67	67	67	64	64	64	64	64	64	64	64	61	59	59	64
September																																
Maximum	67	65	63	66	65	70	70	69	70	68	70	68	69	69	71	70	70	70	70	70	71	70	67	65	62	59	59	61	64	61	--	67
Minimum	61	62	61	60	63	62	61	59	60	63	64	66	65	63	64	65	65	66	64	64	62	63	65	60	57	55	57	57	58	59	--	62

TENNESSEE RIVER BASIN--Continued

3-4875.5. REEDY CREEK AT OREBANK, TENN.

LOCATION.--Temperature recorder at gaging station on upstream right bank at Anderson Bridge, 0.1 mile south of U.S. Highway 11W, 0.3 mile north of Orebank, Sullivan County, 1.0 mile upstream from Gaines Branch, and 9.8 miles upstream from mouth.
DRAINAGE AREA.--36.3 square miles.
RECORDS AVAILABLE.--Water temperatures: Febuary 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 79°F Aug. 16, 17; minimum, 34°F Feb. 2-6.
EXTREMES, February 1964 to September 1965.--Water temperatures: Maximum, 83°F July 28, 1964; minimum, 34°F Feb. 2-6, 1965.

Temperature (°F) of water, water year October 1964 to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	68	69	69	68	65	59	57	57	58	57	56	56	58	58	56	55	57	58	58	55	52	55	54	52	52	53	54	55	57	57	57	58
Minimum	66	67	68	65	59	55	53	53	54	53	51	51	53	54	55	55	55	55	55	51	50	52	52	50	49	50	51	53	54	55	54	55
November																																
Maximum	57	56	54	54	54	53	52	53	55	54	54	53	55	54	53	53	56	57	57	57	50	44	40	43	49	48	48	49	49	46	--	52
Minimum	54	53	51	51	51	51	50	51	53	52	51	50	53	52	51	52	53	56	57	50	44	40	38	40	43	48	46	47	46	41	--	49
December																																
Maximum	41	38	44	49	49	48	42	38	41	41	47	50	50	50	43	40	44	45	38	43	44	44	46	49	51	51	51	50	46	45	46	45
Minimum	35	35	38	44	48	42	38	37	38	39	41	47	49	43	40	38	39	38	35	36	43	44	44	46	49	50	49	46	42	43	45	42
January																																
Maximum	46	48	48	43	41	45	45	48	49	49	47	46	45	45	42	42	41	38	37	38	40	43	46	48	47	48	47	41	42	42	40	44
Minimum	46	46	43	38	39	41	43	44	48	47	46	44	44	42	39	41	38	37	36	35	37	39	43	46	46	45	41	37	41	40	36	42
February																																
Maximum	36	35	34	34	34	39	45	49	50	51	56	56	54	48	44	46	47	47	47	45	45	45	44	46	46	40	45	49	--	--	--	45
Minimum	35	34	34	34	34	34	39	45	47	49	51	54	48	44	41	43	46	44	44	41	42	40	38	42	39	36	37	42	--	--	--	41
March																																
Maximum	51	51	52	52	48	44	44	44	45	45	45	44	46	46	46	47	47	51	50	47	44	49	49	53	53	56	56	58	57	55	57	49
Minimum	45	49	49	48	44	43	43	44	44	42	40	42	40	42	41	41	46	44	44	41	37	40	43	49	52	53	50	51	55	53	49	45
April																																
Maximum	57	57	54	53	60	60	70	58	64	60	67	68	64	64	63	62	66	68	65	66	68	69	70	70	70	68	66	60	58	62	--	64
Minimum	50	52	48	51	53	57	56	54	58	56	58	62	58	56	60	59	55	58	60	60	58	61	63	63	65	63	60	56	54	53	--	57
May																																
Maximum	65	65	66	67	67	67	68	69	69	69	68	67	65	66	67	68	68	67	67	67	68	68	68	71	72	72	71	70	69	67	67	68
Minimum	57	59	60	61	63	64	66	66	66	66	67	65	61	63	64	66	67	66	62	63	64	65	65	67	69	70	68	67	67	64	64	65
June																																
Maximum	68	69	72	70	70	72	71	71	72	73	73	70	73	72	70	66	68	67	65	70	72	73	73	71	71	73	74	75	76	75	--	71
Minimum	65	67	68	68	67	69	69	68	69	69	69	68	70	70	65	64	65	64	63	64	67	63	70	69	68	63	69	70	72	71	--	68
July																																
Maximum	75	75	74	73	73	75	75	76	75	73	70	71	71	74	73	72	73	74	74	74	74	74	76	76	74	71	70	70	70	68	68	73
Minimum	70	70	71	71	70	70	71	72	72	70	68	66	69	71	72	70	70	70	70	69	69	70	71	73	71	70	69	68	67	67	66	70
August																																
Maximum	68	69	69	75	76	77	75	73	74	75	75	75	75	75	77	79	79	78	76	77	76	74	73	72	72	71	72	72	70	68	68	74
Minimum	67	66	65	65	70	72	72	72	71	71	70	70	71	71	72	73	74	74	74	72	74	72	72	71	71	70	69	70	67	63	65	70
September																																
Maximum	68	67	72	74	74	75	75	74	75	74	76	74	72	74	73	76	76	77	76	76	75	75	72	70	65	61	62	63	64	62	--	72
Minimum	67	64	64	68	68	70	70	68	69	69	71	72	70	69	69	71	70	71	71	71	70	70	70	65	61	58	58	58	59	61	--	67

TENNESSEE RIVER BASIN--Continued

3-4973. LITTLE RIVER ABOVE TOWNSEND, TENN.

LOCATION.--Temperature recorder at gaging station on left bank along State Highway 73, in Great Smoky Mountains National Park, 0.3 mile upstream from Rush Branch, 0.4 mile southeast of Park entrance, 2.2 miles southeast of Townsend, Blount County, and at mile 35.5.
DRAINAGE AREA.--106 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 75°F Aug. 17, 18; minimum, freezing point Feb. 3-6.
EXTREMES, 1963-65.--Water temperatures: Maximum, 79°F June 23, 1964; minimum, freezing point Feb. 3-6, 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganess (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed	
																			Calcium, magnesium	Noncarbonate					Filtered	Unfiltered
Mar. 9, 1965.	258	5.5		0.00	0.00	1.0	0.6	0.7	0.2		6	0	1.6	0.3	0.0	0.4		16	5	0		13	6.4	6		

Temperature (°F) of water, water year October 1964 to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	66	65	67	67	61	56	53	52	53	53	52	50	52	52	52	52	53	54	54	52	48	50	49	48	47	47	49	50	53	53	53	54
Minimum	64	65	66	61	56	53	51	51	51	52	49	48	50	51	52	52	52	52	52	48	46	48	47	45	45	45	47	49	50	52	52	52
November																																
Maximum	53	53	51	51	51	51	50	51	51	51	50	50	53	53	52	52	55	55	55	55	48	43	40	44	48	48	47	49	49	46	--	50
Minimum	52	51	50	50	50	50	49	50	50	49	49	49	50	52	51	51	52	55	55	48	43	40	39	40	44	47	45	46	46	40	--	48
December																																
Maximum	40	37	45	50	50	46	41	38	39	41	48	48	48	47	42	40	46	46	39	42	42	43	46	51	51	51	51	48	45	46	48	45
Minimum	36	36	37	45	46	41	38	37	38	39	41	48	46	42	40	38	39	39	36	37	42	42	43	46	51	51	48	45	43	43	46	42
January																																
Maximum	48	50	51	44	42	45	45	48	50	50	47	44	43	43	41	40	38	35	35	36	38	39	44	46	45	46	46	40	37	37	37	43
Minimum	48	48	44	41	41	42	43	45	48	47	44	42	42	41	40	38	35	35	35	35	36	37	39	44	43	43	40	36	36	37	33	41
February																																
Maximum	33	33	33	32	32	33	41	44	48	50	51	51	49	43	40	40	41	42	42	41	41	41	38	44	44	37	40	42	--	--	--	41
Minimum	33	33	32	32	32	32	33	41	44	48	49	49	43	40	38	38	40	40	40	38	39	37	36	38	37	36	36	39	--	--	--	38
March																																
Maximum	44	47	48	48	44	41	38	38	41	41	41	39	41	41	43	45	48	48	48	43	38	41	47	47	48	48	49	52	52	51	51	45
Minimum	41	44	46	44	41	38	38	38	38	39	38	39	38	39	40	40	45	45	43	38	35	36	41	47	47	48	47	48	51	51	49	42

TENNESSEE RIVER BASIN--Continued

3-4973. LITTLE RIVER ABOVE TOWNSEND, TENN--Continued

Temperature (°F) of water, water year October 1964 to September 1965--Continued

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
April																																
Maximum	50	53	52	52	56	56	57	56	61	60	61	63	61	59	57	57	56	59	58	58	59	61	63	65	65	65	64	61	57	56	--	59
Minimum	47	49	49	49	51	55	55	55	56	57	57	60	59	55	55	56	52	55	57	57	56	58	60	61	63	63	61	57	55	54	--	56
May																																
Maximum	60	62	62	64	64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	62	62	63	64	64	63	63	63	63	62	61	--
Minimum	56	59	60	61	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	62	61	61	61	62	61	62	61	61	59	59	--
June																																
Maximum	62	63	64	64	64	64	64	64	66	66	66	65	67	67	65	65	64	64	63	65	66	66	67	67	67	67	67	68	69	69	--	66
Minimum	60	60	62	62	62	63	63	62	63	64	65	64	64	65	65	64	64	62	61	62	63	64	65	65	64	66	66	66	67	68	--	64
July																																
Maximum	71	71	70	70	71	73	72	73	72	71	70	70	70	70	70	70	71	72	71	71	72	71	71	71	70	71	70	68	68	68	69	71
Minimum	68	67	69	68	69	69	69	69	69	68	67	68	67	68	68	68	67	68	70	68	69	69	69	68	69	69	68	67	67	66	66	68
August																																
Maximum	68	69	69	69	69	69	70	70	70	71	70	70	70	73	73	74	75	75	74	72	72	72	71	71	70	70	70	70	69	68	69	71
Minimum	67	67	66	66	67	67	68	69	68	68	67	68	68	69	71	71	72	72	72	70	70	70	70	70	70	68	68	69	68	66	67	69
September																																
Maximum	68	68	68	68	68	70	70	70	70	70	72	71	70	69	70	70	70	70	70	70	70	70	69	69	66	63	62	62	62	62	--	68
Minimum	67	67	67	66	67	68	67	67	67	68	69	69	69	67	68	69	69	69	68	68	68	68	68	66	63	60	61	61	61	62	--	66

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters 0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	Method of analysis
Mar. 25, 1965.......	1010			1920	48	249												
Mar. 25.............	1045			2400	351	2270												
Mar. 25.............	1135			3650	593	5840												
Mar. 25.............	1205			5120	735	10160												
Mar. 25.............	1315			7040	316	6010												
Mar. 25.............	1505	47		6920	320	5980	29	39	47	62	80	80	86	93	100			SBWC

TENNESSEE RIVER BASIN--Continued

3-5105. TUCKASEGEE RIVER AT DILLSBORO, N. C.

LOCATION.--At gaging station on left bank, 0.4 mile downstream from Scott Creek, 0.5 mile downstream from U.S. Highway 23 at Dillsboro, Jackson County, and at mile 31.1.
DRAINAGE AREA.--347 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids		Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color
														Residue at 180°C	Calculated	Calcium, magnesium	Noncarbonate			
Oct. 27, 1964..	498	8.2	0.03	1.9	0.4	4.2	0.6	12	5.8	1.9	0.0	0.4	0.00	30	30	6	0	31	6.5	17
Nov. 9.........	955	8.3	.03	1.8	.7	1.5	.7	13	1.4	1.5	.0	.2	.00	24	22	8	0	25	6.5	15
Dec. 3.........	990	7.7	.04	1.7	.7	19	1.1	29	20	.7	.2	1.8	.00	106	67	7	0	97	6.6	120
Jan. 6, 1965...	555	7.8	.02	1.8	.5	4.4	.8	13	4.0	.7	.1	.5	.00	40	27	6	0	34	6.2	25
Feb. 8.........	1230	7.8	.02	1.9	.4	1.4	.5	10	2.0	1.1	.2	.1	.10	24	21	6	0	19	6.1	15
Mar. 3.........	1100	7.4	.00	1.2	.4	1.5	.5	10	1.4	1.0	.0	.4	.00	22	19	5	0	19	6.4	10
Apr. 26........	1360	9.5	.02	1.9	.7	1.6	.8	12	2.8	1.3	.0	.1	.00	26	25	8	0	26	6.1	5
May 4..........	930	7.1	.02	1.2	.6	3.0	.6	9	2.4	.9	.0	.2	.00	26	20	6	0	32	6.8	20
June 9.........	801	8.9	.02	2.2	.7	6.7	.8	17	5.2	1.0	.1	.7	.10	59	34	8	0	46	6.0	110
July 12........	445	9.3	.14	2.6	.2	9.6	1.0	21	7.4	1.2	.2	.9	.00	63	43	6	0	61	6.1	50
Aug. 3.........	431	8.2	.02	2.6	.3	10	1.3	25	6.8	1.2	.0	1.5	.00	67	44	8	0	63	6.6	80
Sept. 2........	468	7.0	.09	2.1	.2	6.2	.7	16	5.2	1.2	.0	.8	.04	44	32	6	0	42	6.4	50

TENNESSEE RIVER BASIN--Continued

3-5130. TUCKASEGEE RIVER AT BRYSON CITY, N. C.

LOCATION.--At gaging station on left bank, 400 feet downstream from bridge on State Highway 28S, Everett Street, in Bryson City, Swain County, 0.6 mile downstream from Deep Creek, and at mile 12.6.
DRAINAGE AREA.--655 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to September 1951, October 1957 to September 1965.
Water temperatures: October 1950 to September 1951.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids		Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color
														Residue at 180°C	Calculated	Calcium, magnesium	Noncarbonate			
Oct. 28, 1964..	1290	7.8	0.03	2.2	0.3	7.4	0.9	16	9.8	1.7	0.0	0.5	0.00	42	39	6	0	46	6.4	40
Nov. 6.........	1040	7.1	.04	1.6	.8	5.5	.9	12	4.6	1.9	.1	.5	.10	39	29	7	0	40	6.1	40
Dec. 28........	2360	7.7	.01	2.0	.1	3.7	.6	11	4.6	.7	.0	.6	.00	31	25	6	0	30	6.7	20
Jan. 28, 1965..	1750	7.7	.04	1.9	.1	5.3	.6	12	6.8	.6	.0	.2	.00	39	29	6	0	35	6.6	35
Feb. 26........	2380	7.5	.04	2.2	.4	4.4	.7	12	5.2	1.5	.1	.4	.00	34	28	7	0	33	6.6	30
Mar. 31........	4170	7.2	.01	1.8	.3	2.8	.6	9	4.0	1.0	.0	.3	.00	26	22	6	0	26	6.2	15
Apr. 22........	1560	8.4	.05	2.0	.5	5.6	.9	15	7.6	1.8	.1	.4	.00	43	34	7	0	40	6.3	35
May 26.........	1920	7.9	.04	2.2	.1	5.1	1.1	13	5.6	.5	.0	.4	.00	37	29	6	0	38	6.1	30
June 15........	1680	7.5	.01	1.4	.6	5.3	.8	14	5.4	.5	.0	.5	.00	43	29	6	0	45	6.1	35
July 7.........	840	8.4	.07	2.2	.8	7.7	1.0	20	6.8	1.1	.1	.7	.00	57	39	8	0	52	6.0	50
Aug. 6.........	702	8.8	.13	2.2	.1	6.6	1.3	17	8.0	.7	.1	.6	.10	50	37	6	0	48	6.2	50
Sept. 14.......	691	8.3	.04	2.7	.3	8.4	1.1	23	8.0	1.2	.1	.7	.06	50	42	8	0	54	6.0	60
Sept. 30.......	618	7.3	.05	2.2	.3	6.6	1.0	17	3.4	1.8	.1	.4	.03	38	31	6	0	48	6.0	40

TENNESSEE RIVER BASIN--Continued

3-5183. LITTLE TENNESSEE RIVER BELOW CHILHOWEE DAM, TENN.

LOCATION.--Temperature recorder at gaging station on right bank on U. S. Highway 129 at Tallassee, 100 feet upstream from Cochran Creek, 0.8 mile downstream from Chilhowee Dam, 20 miles south of Maryville, Blount County, and at mile 32.8.
DRAINAGE AREA.--1,967 square miles, including Cochran Creek.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 67°F Sept. 28; minimum, 38°F Feb. 27.
EXTREMES, 1963-65.--Water temperatures: Maximum, 82°F Aug. 29, 1964; minimum, 38°F Feb. 27, 1965.
REMARKS.--Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	63	62	63	62	63	63	62	61	61	61	61	60	62	61	60	60	62	62	61	62	61	61	62	61	61	61	61	61	63	64	64	62
Minimum	61	61	61	61	61	60	59	59	59	58	58	58	59	60	60	60	59	60	60	59	59	58	59	59	59	59	59	60	61	61	60	60
November																																
Maximum	63	62	62	62	61	61	61	61	61	61	61	60	61	61	62	60	60	61	61	61	60	60	58	57	57	58	57	57	57	57	--	60
Minimum	61	61	60	60	60	59	59	60	60	60	59	59	60	59	58	60	60	60	60	58	57	56	57	56	56	56	55	56	55	54	--	58
December																																
Maximum	57	56	56	56	55	55	54	53	53	53	52	52	53	53	52	51	51	51	51	50	49	49	51	51	--	--	--	--	--	--	--	--
Minimum	52	54	54	55	54	53	52	51	51	51	52	52	51	51	50	49	50	49	49	49	48	49	49	49	--	--	--	--	--	--	--	--
January																																
Maximum	50	50	50	49	49	49	49	50	49	49	49	50	48	48	--	--	46	45	46	45	45	45	--	--	46	47	46	47	46	45	46	48
Minimum	49	49	48	49	47	48	48	48	48	48	48	47	46	45	--	--	41	43	41	41	41	43	--	--	43	44	45	43	43	45	41	45
February																																
Maximum	--	--	--	--	--	--	--	--	--	45	49	47	46	46	48	45	45	48	47	46	46	46	45	44	43	43	45	43	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	44	44	45	43	45	44	43	44	43	43	42	43	42	41	42	42	40	38	40	--	--	--	--
March																																
Maximum	44	44	45	45	45	44	44	43	46	47	45	44	47	44	44	46	47	50	46	46	49	47	51	48	47	48	53	54	51	50	50	47
Minimum	41	43	43	43	42	42	42	42	42	41	40	42	41	41	42	41	44	44	42	42	40	42	43	45	45	45	47	49	49	49	50	43
April																																
Maximum	55	54	--	54	54	53	55	53	58	55	57	57	58	56	55	56	60	61	55	60	60	61	59	61	61	59	56	56	56	59	--	57
Minimum	49	48	--	48	49	49	49	49	50	49	50	50	49	49	51	51	50	51	52	52	52	52	53	54	54	55	55	54	53	52	--	51
May																																
Maximum	59	61	60	59	58	57	57	58	61	57	56	57	57	57	58	57	53	55	57	55	56	58	59	58	59	60	57	61	60	59	58	58
Minimum	51	51	52	52	52	52	51	51	53	52	52	52	51	51	51	51	51	52	52	51	52	52	52	52	53	53	54	54	55	53	53	52
June																																
Maximum	59	58	60	57	58	62	58	62	59	60	57	60	61	57	57	57	56	60	60	62	59	59	58	56	59	59	59	60	58	58	--	59
Minimum	53	53	55	55	55	54	55	55	55	55	55	55	55	55	54	54	54	53	52	52	54	53	53	54	54	54	54	54	54	54	--	54
July																																
Maximum	56	57	58	58	60	60	59	58	58	56	60	58	59	58	58	58	58	59	59	58	58	58	57	57	58	58	58	60	60	60	61	58
Minimum	53	53	54	54	54	54	54	55	55	54	54	54	54	54	54	54	53	54	54	54	54	54	55	55	55	55	55	55	55	55	55	54
August																																
Maximum	61	62	62	60	60	59	59	63	59	61	60	61	58	60	62	58	60	63	64	60	62	61	62	59	58	61	60	61	63	60	61	61
Minimum	56	57	56	56	57	55	55	56	56	55	55	56	56	56	56	56	57	57	57	57	58	58	58	58	58	58	58	58	57	57	58	57
September																																
Maximum	60	60	59	61	63	63	61	63	63	62	62	63	61	65	63	63	63	63	66	65	65	64	64	63	65	65	65	67	64	64	--	63
Minimum	58	57	58	57	57	57	58	58	58	59	58	59	59	59	59	59	60	60	60	60	60	61	61	62	60	60	60	60	61	61	--	59

TENNESSEE RIVER BASIN--Continued

3-5185. TELLICO RIVER AT TELLICO PLAINS, TENN.

LOCATION.--Temperature recorder at gaging station on right bank, 200 feet upstream from bridge on Tellico Plains-Rafter road, 0.4 mile downstream from Laurel Creek, 0.8 mile east of Tellico Plains, Monroe County, and at mile 28.2.
DRAINAGE AREA.--118 square miles.
RECORDS AVAILABLE.--Water temperatures: July 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 83°F Aug. 16; minimum, freezing point on Dec. 2, Jan. 17-20, Jan. 31 to Feb. 7.
EXTREMES, 1963-65.--Water temperatures: Maximum, 87°F July 31, Aug. 2, 1964; minimum, freezing point Dec. 2, 1964, Jan. 17-20, Jan. 31 to Feb. 7, 1965.
REMARKS.--Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	74	75	74	72	63	60	57	58	58	57	56	56	58	57	56	55	58	60	59	54	53	54	53	52	52	53	53	53	58	60	59	59
Minimum	68	69	68	63	58	52	50	49	50	50	47	47	50	51	54	54	52	52	54	49	45	46	47	45	45	45	47	50	53	54	52	52
November																																
Maximum	60	58	57	56	56	55	54	54	55	54	53	55	59	57	56	57	60	61	60	58	48	41	40	43	50	50	48	51	50	45	--	53
Minimum	54	53	50	50	49	48	47	51	50	47	46	48	53	52	51	52	56	58	58	48	41	36	35	37	43	47	45	45	45	38	--	48
December																																
Maximum	38	37	46	53	51	46	39	38	40	42	49	51	49	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	33	32	35	46	46	39	34	33	35	37	42	49	46	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
January																																
Maximum	--	--	--	--	--	--	47	51	53	52	47	44	43	43	40	40	35	33	33	35	40	43	48	50	48	50	47	40	40	40	38	43
Minimum	--	--	--	--	--	--	43	47	50	47	44	41	41	40	38	35	32	32	32	32	34	37	41	48	44	44	40	36	36	38	32	39
February																																
Maximum	32	33	33	32	33	33	45	47	52	54	55	54	50	44	41	42	44	47	46	45	45	43	42	47	47	38	42	46	--	--	--	43
Minimum	32	32	32	32	32	32	32	45	47	52	52	50	44	40	38	40	42	41	41	39	40	36	34	38	36	34	34	39	--	--	--	39
March																																
Maximum	47	51	52	52	45	41	40	40	45	45	42	41	46	43	49	49	50	51	50	44	42	45	50	50	52	52	52	56	56	54	52	48
Minimum	42	47	50	45	41	38	38	40	39	40	38	40	39	40	41	42	46	47	44	38	34	36	41	48	50	50	47	50	54	52	49	43
April																																
Maximum	53	57	55	54	58	59	63	52	65	62	65	67	64	59	59	60	60	63	59	63	64	67	69	70	69	68	65	59	58	62	--	62
Minimum	48	51	48	48	53	57	58	58	58	58	59	63	58	54	55	56	51	54	57	56	56	58	60	62	65	64	59	56	54	51	--	56
May																																
Maximum	65	68	69	70	69	71	72	71	72	73	70	70	72	73	73	74	72	69	72	72	72	67	66	69	70	67	66	69	70	68	69	70
Minimum	55	59	59	60	61	61	62	63	63	65	65	64	60	61	62	64	65	64	64	66	65	59	61	61	64	61	64	62	64	61	61	62
June																																
Maximum	69	71	71	71	68	70	68	74	76	77	73	74	78	74	70	69	68	71	71	74	75	74	75	73	75	77	76	78	77	77	--	73
Minimum	62	63	66	66	65	64	66	64	67	69	70	68	69	69	67	66	65	62	61	62	64	65	66	68	67	68	68	68	70	70	--	66
July																																
Maximum	80	79	77	74	76	80	81	81	81	79	76	77	76	77	76	76	79	79	78	80	80	79	77	74	71	72	72	72	73	74	74	77
Minimum	70	69	69	67	69	69	71	73	72	72	67	70	68	70	71	68	68	69	71	69	71	71	71	68	68	66	68	68	67	67	66	69
August																																
Maximum	74	--	75	76	74	72	76	74	76	78	78	76	78	79	82	83	81	81	79	80	77	76	77	77	75	76	77	75	76	76	76	77
Minimum	67	--	67	66	67	67	67	69	69	68	68	69	70	71	72	73	74	72	73	72	72	72	71	72	72	69	70	71	68	66	67	70
September																																
Maximum	72	71	73	73	74	77	77	77	77	78	78	74	70	76	76	76	77	75	77	77	77	76	74	71	67	65	67	68	68	66	--	73
Minimum	68	67	66	67	66	69	70	68	68	70	71	69	68	68	68	70	70	70	69	69	69	69	70	64	60	59	60	60	60	64	--	67

TENNESSEE RIVER BASIN--Continued

3-5280. CLINCH RIVER ABOVE TAZEWELL, TENN.

LOCATION.--Temperature recorder at gaging station on right bank, 0.4 mile upstream from Grisson Island, 4.6 miles downstream from Big War Creek, 10 miles east of Tazewell, Claiborne County, and at mile 159.8.
DRAINAGE AREA.--1,474 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 86°F Aug. 17, 18, 20; minimum, freezing point Feb. 2-6.
EXTREMES, 1962-65.--Water temperatures: Maximum, 88°F June 20, 23, 24, 1964; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	69	68	68	68	67	65	63	61	61	60	59	58	59	59	59	59	57	57	57	57	56	55	55	55	54	54	54	53	56	58	58	59
Minimum	68	67	68	67	65	63	59	58	58	58	56	56	57	58	58	57	56	57	57	56	55	54	54	53	53	53	52	51	53	54	54	58
November																																
Maximum	58	59	57	56	56	56	55	54	54	54	54	54	56	56	56	57	58	58	60	59	54	49	45	43	46	48	48	48	48	47	--	53
Minimum	55	55	54	53	53	52	51	53	52	51	51	51	54	53	52	53	56	57	58	54	49	45	42	41	43	46	47	48	47	44	--	51
December																																
Maximum	44	40	41	43	44	44	42	40	40	40	41	49	49	49	47	44	42	42	39	38	40	42	43	47	49	50	50	49	48	47	46	44
Minimum	40	39	39	40	43	42	40	39	38	38	40	41	48	47	44	42	41	39	37	37	38	40	42	43	47	49	49	48	47	46	45	42
January																																
Maximum	46	47	47	45	43	43	42	44	47	47	47	46	44	44	42	41	39	37	36	36	36	36	39	42	44	45	45	43	42	41	39	42
Minimum	46	46	45	42	42	42	42	42	44	47	46	44	44	42	41	39	37	36	35	34	34	35	36	39	42	43	43	41	41	39	37	41
February																																
Maximum	37	34	33	32	33	33	35	40	42	47	50	52	51	49	46	44	44	45	45	45	43	42	42	42	42	40	38	41	--	--	--	42
Minimum	34	32	32	32	32	32	33	35	40	42	47	50	49	46	44	43	43	42	43	42	42	39	38	40	40	37	36	38	--	--	--	39
March																																
Maximum	43	45	48	49	48	45	42	42	44	44	44	43	45	44	46	48	49	50	49	49	45	45	45	47	50	51	51	52	53	53	52	47
Minimum	40	43	45	47	45	42	42	41	41	42	41	42	41	41	41	42	46	48	48	45	43	42	43	45	47	50	50	50	51	51	51	45
April																																
Maximum	53	53	52	51	54	55	57	57	59	60	62	63	63	61	60	59	57	58	59	61	62	64	66	68	69	69	68	65	61	60	--	60
Minimum	50	51	51	51	51	53	54	56	55	58	58	62	61	59	59	57	56	56	58	58	59	60	63	64	66	67	65	61	59	57	--	58
May																																
Maximum	63	66	69	70	71	72	74	75	75	76	75	74	73	73	74	75	75	75	75	73	71	71	71	73	74	74	74	75	75	74	74	73
Minimum	58	61	64	65	67	68	69	70	72	73	74	72	70	71	70	72	73	74	72	70	68	69	69	70	71	71	73	72	72	71	71	70
June																																
Maximum	75	75	76	77	77	78	77	77	77	79	79	78	79	79	78	75	76	76	76	76	77	78	79	78	79	80	80	80	80	80	--	78
Minimum	71	72	73	74	75	74	75	74	74	75	77	76	76	76	75	73	72	72	71	72	73	74	75	76	75	76	76	77	78	78	--	74
July																																
Maximum	81	82	81	81	82	83	83	83	82	80	82	82	83	84	83	82	83	84	83	83	83	82	82	84	84	83	82	81	81	81	80	82
Minimum	77	77	79	79	78	78	79	79	79	79	77	78	79	80	80	80	79	80	80	80	79	78	79	80	81	81	80	78	78	77	76	79
August																																
Maximum	80	79	80	80	80	82	82	81	80	81	81	82	83	84	85	85	86	86	84	86	84	84	82	81	81	80	82	81	79	78	78	82
Minimum	76	75	75	75	76	77	78	77	78	76	76	77	79	80	80	81	82	82	81	80	80	78	79	78	78	77	77	78	75	73	74	78
September																																
Maximum	76	76	77	78	77	81	81	84	84	83	83	80	77	81	81	82	82	83	83	82	81	81	77	76	73	71	71	71	72	70	--	78
Minimum	74	72	72	73	74	75	75	75	76	76	77	77	75	74	75	76	77	77	77	77	76	75	75	70	68	67	67	67	67	69	--	74

TENNESSEE RIVER BASIN--Continued

3-5320. POWELL RIVER NEAR ARTHUR, TENN.

LOCATION.--Temperature recorder at gaging station on left bank, 500 feet upstream from bridge on U.S. Highway 25E, 2.3 miles east of Arthur, Claiborne County, and 2.4 miles downstream from Indian Creek.
DRAINAGE AREA.--685 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 83°F July 13, 18, Aug. 16-18; minimum, freezing point Feb. 2-6.
EXTREMES, 1962-65.--Water temperatures: Maximum, 85°F June 23, July 27, Aug. 3, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	66	66	66	66	63	61	59	57	56	56	55	55	56	58	57	56	56	55	55	55	53	53	53	52	52	52	53	53	55	56	56	57
Minimum	64	64	65	63	61	58	56	55	55	53	52	51	52	54	55	54	54	54	55	53	50	51	50	49	49	48	49	50	53	54	54	54
November																																
Maximum	57	57	56	55	55	54	53	52	53	53	53	53	56	55	54	54	56	57	57	57	53	49	45	43	47	48	49	49	49	47	--	53
Minimum	54	53	53	52	52	51	49	51	51	50	50	50	53	51	51	52	54	56	56	53	49	45	42	42	43	46	47	48	47	43	--	50
December																																
Maximum	43	41	42	45	45	45	44	42	41	40	44	50	50	50	47	44	42	42	39	40	42	43	46	49	51	52	52	50	48	47	46	45
Minimum	41	40	40	42	45	44	42	40	40	39	40	44	50	47	44	42	42	39	37	38	40	42	43	46	49	50	50	48	47	46	45	43
January																																
Maximum	47	48	48	47	45	45	45	46	48	48	48	47	45	45	43	42	39	38	37	37	37	39	42	45	47	47	47	43	42	41	39	44
Minimum	46	47	47	44	43	44	43	44	46	48	47	45	44	43	41	39	38	37	35	35	35	36	39	42	45	46	43	41	41	39	36	42
February																																
Maximum	36	34	32	32	33	34	39	42	45	47	50	51	50	47	44	43	44	45	45	44	43	41	42	43	42	41	40	42	--	--	--	42
Minimum	34	32	32	32	32	32	34	39	42	45	47	50	47	44	42	41	43	42	43	41	39	38	38	40	40	38	38	39	--	--	--	39
March																																
Maximum	45	47	51	50	47	45	43	43	45	45	44	44	45	45	46	48	48	50	50	48	45	45	46	47	50	51	51	50	52	52	52	47
Minimum	41	45	47	47	45	43	42	42	43	43	42	43	42	43	42	43	47	48	48	45	42	41	43	46	47	50	50	49	50	51	50	45
April																																
Maximum	52	54	53	52	54	55	56	56	58	58	60	62	61	60	59	58	57	58	58	61	62	64	66	67	68	68	66	64	61	62	--	60
Minimum	50	50	51	51	51	54	54	55	54	55	57	59	58	57	57	55	55	54	56	56	57	59	62	64	66	65	64	60	58	57	--	57
May																																
Maximum	63	65	67	69	68	71	71	72	74	75	72	71	72	72	73	73	72	73	74	73	73	73	73	73	75	76	75	74	74	73	73	72
Minimum	58	61	62	64	65	66	67	67	69	69	70	69	66	67	67	69	70	70	69	71	70	71	70	70	71	72	72	71	71	68	68	68
June																																
Maximum	75	75	76	75	74	76	74	77	76	78	76	76	78	76	74	71	75	74	74	76	76	78	79	77	79	80	80	80	80	79	--	76
Minimum	69	69	72	72	72	72	73	72	72	72	74	73	73	74	71	70	69	69	68	68	70	72	73	75	72	73	74	75	76	75	--	72
July																																
Maximum	79	79	80	79	80	82	81	80	79	76	81	81	83	82	81	82	81	83	82	81	80	80	--	--	--	--	80	82	81	80	79	81
Minimum	73	73	75	76	75	75	76	76	76	75	74	75	76	78	77	75	76	76	77	74	74	75	--	--	--	--	77	77	78	75	73	75
August																																
Maximum	77	78	79	79	80	81	81	79	79	80	78	80	81	82	82	83	83	83	81	82	80	81	80	79	79	81	81	79	77	75	74	80
Minimum	74	72	72	72	73	75	76	76	75	74	73	73	75	76	76	77	78	78	78	78	77	77	77	77	76	76	76	76	72	70	70	75
September																																
Maximum	72	75	75	76	75	77	78	79	79	78	78	76	74	77	77	78	79	80	80	80	78	78	74	73	69	66	68	68	69	67	--	75
Minimum	71	68	69	70	71	72	72	73	72	72	74	73	72	71	72	74	74	74	75	75	73	73	73	67	64	63	62	63	63	66	--	70

TENNESSEE RIVER BASIN--Continued

3-5382.25. POPLAR CREEK NEAR OAK RIDGE, TENN.

LOCATION.--Temperature recorder at gaging station on right bank, 1,000 feet upstream from county bridge, 0.4 mile downstream from Indian Creek, and 1.2 miles northwest of intersection of State Highway 95 and Anderson County line in Oak Ridge.
DRAINAGE AREA.--82.5 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1961 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 75°F Aug. 16-21, 23; minimum, 34°F Feb. 4.
EXTREMES, 1961-65.--Water temperatures: Maximum, 79°F Aug. 2-4, 1964; minimum, 33°F on several days in December 1962, December 1983, and January 1964.

Temperature (°F) of water, water year October 1964 to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	68	68	68	68	66	62	58	55	56	56	54	54	56	58	59	59	60	60	61	60	55	55	55	54	53	53	55	56	59	60	60	59
Minimum	68	68	68	66	62	58	55	54	55	54	53	53	54	56	58	59	59	59	60	55	52	53	53	52	52	52	53	55	56	59	58	57
November																																
Maximum	61	61	60	58	57	57	55	56	56	56	56	60	61	61	59	60	63	63	63	63	57	51	46	45	52	52	52	52	52	50	--	56
Minimum	59	60	57	56	56	55	53	55	56	55	55	55	59	58	58	58	60	63	63	57	51	46	43	44	45	52	50	51	50	46	--	54
December																																
Maximum	46	42	46	53	53	52	48	44	44	44	49	53	53	52	45	42	43	44	41	42	44	44	48	52	52	52	52	50	48	48	48	48
Minimum	42	41	42	46	52	48	44	42	43	44	44	49	52	44	42	40	40	41	37	37	42	44	44	48	52	52	50	48	46	46	48	45
January																																
Maximum	49	50	50	47	44	46	47	50	52	52	50	48	47	47	46	44	44	40	40	40	41	43	46	48	48	48	48	45	41	41	41	46
Minimum	48	49	47	42	43	44	46	47	50	50	48	46	46	46	44	44	40	40	38	38	40	41	43	46	48	47	45	40	41	41	38	44
February																																
Maximum	38	37	36	35	36	38	41	46	48	51	52	52	52	47	45	43	45	45	46	46	44	44	42	44	44	40	43	46	--	--	--	44
Minimum	37	36	35	34	35	36	38	41	46	48	51	52	47	45	42	41	43	44	45	43	43	42	40	42	40	38	39	43	--	--	--	42
March																																
Maximum	48	49	51	51	48	46	45	45	46	46	46	44	45	45	45	47	48	48	49	47	45	45	48	50	51	51	51	51	52	52	52	48
Minimum	45	48	49	48	46	45	45	45	45	44	43	44	43	44	43	44	47	47	47	45	41	42	45	48	50	51	49	50	51	52	50	46
April																																
Maximum	53	54	54	51	51	55	57	57	59	59	61	63	63	60	56	57	57	59	59	60	60	62	64	65	65	65	65	61	58	58	--	59
Minimum	51	53	51	51	50	51	55	55	55	56	57	61	59	56	56	56	54	55	58	57	57	59	61	63	64	64	61	58	55	55	--	56
May																																
Maximum	60	62	63	63	63	64	65	65	65	65	65	64	63	63	63	64	64	63	64	64	65	65	65	66	68	68	68	66	65	64	64	64
Minimum	57	60	61	61	62	62	63	64	64	64	64	63	60	61	61	63	63	63	62	64	64	64	64	64	66	66	66	64	64	61	62	63
June																																
Maximum	64	68	69	69	68	68	68	68	68	70	70	70	70	70	69	68	67	67	65	66	68	69	70	70	70	71	71	72	72	71	--	69
Minimum	63	64	68	68	68	67	68	67	68	68	70	69	68	69	68	67	67	65	64	64	66	67	68	70	68	69	70	70	71	69	--	68
July																																
Maximum	70	70	70	71	71	72	72	72	70	69	69	70	71	71	71	71	70	71	71	71	71	71	71	70	70	71	71	70	70	68	66	70
Minimum	69	69	70	70	71	71	71	70	69	69	68	69	70	70	71	70	69	69	70	69	69	70	70	70	70	70	70	70	68	65	65	69
August																																
Maximum	67	67	67	67	69	70	70	70	71	71	71	71	72	73	74	75	75	75	75	75	75	74	75	74	74	74	74	74	73	70	68	72
Minimum	66	67	67	67	67	69	70	70	70	70	70	70	70	72	73	73	74	74	74	74	74	73	74	74	73	74	74	73	70	66	67	71
September																																
Maximum	68	68	68	69	69	70	70	71	70	69	71	71	70	70	69	70	71	72	72	72	71	71	69	68	66	62	60	62	62	62	--	68
Minimum	68	66	66	68	68	68	69	70	69	68	69	70	70	68	68	69	69	70	71	70	69	69	68	66	62	58	58	60	60	62	--	67

TENNESSEE RIVER BASIN--Continued

3-5382.5. EAST FORK POPLAR CREEK NEAR OAK RIDGE, TENN.

LOCATION.--Temperature recorder at gaging station near left bank on county road bridge, 0.3 mile north of State Highway 95, 1.7 miles upstream from Bear Creek, and 2.8 miles southwest of intersection of State Highway 95 and Anderson County line in Oak Ridge.
DRAINAGE AREA.--19.5 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1961 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 76°F Aug. 17, 18; minimum, 33°F Feb. 3, 4.
EXTREMES, 1961-65.--Water temperatures: Maximum, 78°F July 16, 1962; minimum, 33°F Feb. 3, 4, 1965.

Temperature (°F) of water, water year October 1964 to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	70	71	71	70	69	63	59	58	60	59	57	58	60	62	62	62	63	63	63	61	57	58	58	57	56	57	59	61	64	64	63	62
Minimum	69	70	70	69	63	59	57	57	58	57	56	56	58	59	62	62	62	60	61	57	55	56	56	55	55	55	56	59	61	63	61	60
November																																
Maximum	64	63	62	61	61	60	60	62	61	60	60	60	63	62	60	63	64	65	65	65	57	51	47	51	53	54	54	55	55	52	--	59
Minimum	63	62	60	58	58	58	56	60	58	58	58	58	60	60	58	59	62	64	65	57	51	47	45	47	51	53	53	53	52	48	--	56
December																																
Maximum	48	47	51	55	55	54	50	48	49	51	54	54	54	53	48	46	48	48	45	44	46	48	51	56	56	54	54	51	50	50	51	51
Minimum	45	45	47	51	54	50	47	46	48	49	51	54	53	48	46	44	45	45	42	42	44	46	48	51	54	54	51	50	48	49	50	48
January																																
Maximum	51	51	51	47	46	48	48	49	50	50	45	45	45	45	44	43	42	39	39	40	42	44	47	47	47	47	47	43	42	42	41	45
Minimum	50	51	47	44	44	46	46	46	49	45	44	44	45	44	43	42	39	39	37	38	40	42	44	47	46	46	43	40	42	41	37	44
February																																
Maximum	37	37	35	35	37	40	42	45	47	48	50	50	49	44	43	42	43	45	45	44	43	44	42	44	45	41	44	47	--	--	--	43
Minimum	37	35	33	33	34	37	40	42	45	47	48	49	44	43	41	40	41	43	43	42	42	40	39	42	40	40	41	44	--	--	--	41
March																																
Maximum	49	51	52	52	48	47	47	48	50	50	48	49	49	49	49	51	52	52	52	50	48	48	53	55	56	54	55	56	56	56	55	51
Minimum	46	50	51	47	47	47	47	47	48	48	47	48	47	47	46	48	51	50	49	48	45	45	50	53	54	54	51	53	56	55	52	49
April																																
Maximum	57	58	58	55	58	59	61	60	66	64	64	66	65	62	60	61	61	63	63	65	64	67	68	68	68	68	68	64	61	61	--	63
Minimum	55	56	54	54	55	58	58	57	56	60	61	64	62	59	59	59	57	59	62	61	61	62	65	65	67	68	64	61	60	58	--	60
May																																
Maximum	64	65	66	66	67	67	68	69	70	70	70	69	69	67	67	68	68	67	67	68	68	68	68	69	70	71	71	70	69	67	67	68
Minimum	60	62	63	64	64	64	66	67	67	69	69	68	65	65	65	66	67	67	67	67	67	68	67	67	68	70	70	69	67	64	64	66
June																																
Maximum	68	69	71	72	70	70	70	70	70	71	72	72	72	71	71	70	69	68	67	68	69	70	72	71	71	71	72	72	75	75	--	71
Minimum	65	67	69	70	69	69	69	70	70	70	71	72	70	70	70	69	68	66	65	65	67	69	70	71	71	70	70	71	72	73	--	69
July																																
Maximum	74	73	72	73	73	73	73	74	74	74	73	73	73	73	73	73	72	73	73	73	73	74	74	74	74	74	74	73	71	71	69	73
Minimum	72	71	72	72	73	72	72	73	74	73	72	72	73	73	73	72	71	71	72	72	72	73	74	74	74	74	73	70	71	69	68	72
August																																
Maximum	70	69	70	70	72	72	72	73	72	72	71	72	73	74	74	74	76	76	75	75	74	74	74	74	74	75	75	74	73	69	69	73
Minimum	69	69	69	69	70	71	72	72	72	70	70	70	72	73	73	73	74	75	74	74	74	74	74	74	73	73	74	73	69	67	68	72
September																																
Maximum	70	71	70	72	72	72	73	73	73	72	73	73	73	71	71	72	73	74	73	73	73	73	72	72	70	64	64	66	67	68	--	71
Minimum	69	69	70	70	71	71	72	73	72	72	72	73	71	70	70	71	72	73	73	72	72	72	71	70	64	62	63	64	65	67	--	70

TENNESSEE RIVER BASIN--Continued

3-5398. OBED RIVER NEAR LANCING, TENN.

LOCATION.--Temperature recorder at gaging station on left bank at Alley Ford, 1.4 miles upstream from mouth, 2.9 miles southwest of Lancing, Morgan County, 3.0 miles downstream from Clear Creek, and at mile 1.5.
DRAINAGE AREA.--518 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 83°F Aug. 16-18; minimum, 33°F Feb. 2.

Temperature (°F) of water, water year October 1964 to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	69	69	69	69	69	66	63	61	61	60	58	56	57	58	58	58	60	59	58	56	56	57	55	55	53	53	56	53	54	54	54	59
Minimum	69	69	69	69	66	63	61	61	60	58	56	56	56	56	58	58	58	57	56	55	53	54	53	52	51	50	51	53	53	54	54	58
November																																
Maximum	55	56	56	56	56	56	54	53	54	53	53	53	55	54	55	54	55	55	56	56	54	50	47	44	44	45	45	46	46	46	--	52
Minimum	54	55	55	54	55	54	52	53	53	52	52	53	53	52	53	54	54	55	55	54	50	47	44	44	44	44	45	45	46	44	--	51
December																																
Maximum	44	43	41	45	46	46	46	43	41	40	41	45	45	45	44	42	40	40	40	39	40	41	42	45	47	48	48	48	47	44	44	44
Minimum	43	41	41	41	45	46	43	41	40	40	40	41	45	44	42	40	40	40	39	39	39	40	41	42	45	47	48	46	44	43	44	42
January																																
Maximum	45	46	46	46	44	42	42	42	43	43	43	43	42	42	42	40	40	37	37	35	34	34	36	39	40	41	40	40	38	38	37	41
Minimum	44	45	45	44	42	42	42	41	42	43	43	42	42	42	40	39	37	37	35	34	34	34	34	36	39	40	40	38	37	37	35	40
February																																
Maximum	35	34	34	34	34	34	34	35	36	40	43	44	44	44	41	38	38	38	38	40	39	39	39	38	38	38	37	37	--	--	--	38
Minimum	34	33	34	34	34	34	34	34	35	36	40	43	44	41	38	38	38	38	38	39	39	38	38	38	38	37	36	36	--	--	--	37
March																																
Maximum	38	41	43	44	44	43	42	42	42	41	41	41	41	41	41	43	44	45	45	45	44	41	43	44	47	47	47	47	48	48	48	44
Minimum	37	38	41	43	43	42	42	42	41	41	40	41	41	41	41	41	43	44	45	44	41	40	41	43	44	47	47	47	47	48	48	43
April																																
Maximum	49	50	50	50	51	52	54	53	56	56	58	59	59	59	59	58	57	57	57	58	59	61	63	64	65	66	66	66	63	60	--	58
Minimum	48	49	50	50	50	51	52	53	53	56	56	58	59	59	58	57	56	56	57	57	58	59	61	63	64	65	66	63	60	59	--	57
May																																
Maximum	60	62	63	65	65	66	67	67	68	69	69	70	70	71	71	71	71	71	72	72	72	72	72	72	72	71	71	69	67	67	67	69
Minimum	59	60	62	63	64	65	66	67	67	68	69	69	69	69	70	70	71	71	71	71	72	72	72	72	71	71	69	67	67	66	66	68
June																																
Maximum	67	67	70	71	71	72	72	72	72	72	72	72	72	72	72	72	71	71	71	71	72	73	74	74	76	77	78	77	77	77	--	73
Minimum	66	66	67	69	71	71	72	72	72	72	72	72	72	72	72	71	71	71	71	71	71	72	73	74	74	76	77	77	77	77	--	72
July																																
Maximum	78	78	78	78	78	75	74	76	76	76	76	76	76	76	79	79	78	79	79	78	78	78	78	78	78	77	74	74	72	72	72	77
Minimum	77	78	78	78	75	74	74	74	76	76	76	76	76	76	76	77	78	78	78	77	77	77	78	78	77	74	74	72	72	72	72	76
August																																
Maximum	73	73	75	75	76	76	76	76	77	77	78	78	78	80	81	83	83	83	81	82	82	81	81	80	76	74	75	75	75	74	74	78
Minimum	72	73	73	74	74	76	76	76	76	77	77	77	77	78	80	80	81	81	80	80	81	80	80	76	73	73	73	75	73	73	73	76
September																																
Maximum	74	73	76	75	74	77	77	80	80	76	77	77	76	75	74	74	76	76	78	78	78	78	77	76	72	68	68	69	70	70	--	75
Minimum	73	71	72	73	73	73	74	75	74	75	75	76	75	74	74	74	74	76	76	76	76	76	76	72	67	67	67	67	67	69	--	73

TENNESSEE RIVER BASIN--Continued

3-5500. VALLEY RIVER AT TOMOTLA, N. C.

LOCATION.--Temperature recorder at gaging station on right bank at bridge on Secondary Road 1373 at Tomotla, Cherokee County, 0.2 mile upstream from Rogers Creek, 4.7 miles northeast of Murphy, and at mile 6.4.
DRAINAGE AREA.--104 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1953.
Water temperatures: October 1952 to September 1953, October 1961 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 72°F Aug. 16-20; minimum, 35°F Jan. 19 and Feb. 3, 4.
EXTREMES, 1952-53, 1961-65.--Water temperatures: Maximum, 74°F on several days in 1953, 1962, and 1964; minimum, freezing point on several days in 1962-64.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (calculated)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color
														Calcium, magnesium	Noncarbonate			
Dec. 15, 1964........	266	6.9	0.01	3.6	0.9	1.3	0.6	19	1.2	1.8	0.1	0.4	26	12	0	32	7.3	5
May 10, 1965.........	195	6.7	.05	3.0	1.1	1.3	.5	15	1.6	1.8	.1	.6	24	12	0	31	6.7	5

TENNESSEE RIVER BASIN--Continued

3-5500. VALLEY RIVER AT TOMOTLA, N. C.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	64	66	66	66	62	58	54	53	53	53	53	52	54	54	54	54	55	56	56	54	50	51	51	51	50	50	51	52	56	56	55	55
Minimum	63	64	66	62	58	53	52	52	52	52	51	51	52	54	54	54	54	54	54	50	48	49	50	49	48	49	50	51	52	54	54	53
November																																
Maximum	55	55	53	53	53	53	52	55	55	53	53	53	56	56	54	55	58	58	58	58	52	47	42	47	50	51	50	50	50	48	--	53
Minimum	54	53	52	52	52	51	51	52	52	51	49	51	52	54	52	53	55	58	58	52	47	42	41	43	47	49	47	49	48	42	--	50
December																																
Maximum	42	40	46	52	52	50	45	41	42	45	49	52	52	49	45	42	47	47	43	45	45	46	49	53	53	54	54	51	48	48	51	48
Minimum	38	38	40	46	50	45	41	39	40	42	45	49	48	45	41	39	41	43	38	40	45	45	46	49	53	53	51	48	45	46	48	44
January																																
Maximum	51	51	51	46	44	47	46	50	52	52	49	46	45	45	44	42	40	37	37	39	42	44	47	49	49	50	50	44	42	43	43	46
Minimum	51	51	46	42	42	44	46	46	50	49	46	44	44	43	42	40	36	36	35	36	39	42	44	47	45	46	44	39	41	42	38	43
February																																
Maximum	38	38	38	37	39	41	46	50	50	52	54	54	52	48	45	45	46	47	47	47	45	45	44	46	47	41	45	47	--	--	--	46
Minimum	38	38	35	35	36	39	41	46	49	50	51	52	47	45	41	43	45	45	44	42	44	41	40	44	39	37	39	43	--	--	--	42
March																																
Maximum	49	50	52	52	48	43	43	44	47	46	45	44	46	46	47	47	49	52	52	47	45	44	47	49	51	51	52	52	52	55	55	48
Minimum	45	49	50	48	43	42	42	43	43	43	41	43	43	43	43	44	47	48	46	44	38	38	44	47	49	51	47	49	52	50	50	45
April																																
Maximum	51	54	54	51	55	56	59	59	61	61	61	61	59	57	54	56	56	58	58	59	59	60	62	62	61	61	61	59	55	56	--	58
Minimum	49	49	46	48	50	53	55	55	56	55	56	59	53	51	54	53	49	51	54	55	53	55	57	58	59	60	59	55	53	51	--	54
May																																
Maximum	58	60	60	61	61	62	62	62	64	64	63	62	62	61	61	62	62	61	64	64	63	63	63	64	64	65	65	64	64	64	62	62
Minimum	53	56	56	58	58	59	60	60	61	62	62	61	58	58	60	60	61	61	61	63	61	60	61	62	63	63	64	62	63	60	59	60
June																																
Maximum	62	62	65	65	64	64	64	65	66	67	67	66	67	67	66	64	64	63	62	63	64	65	65	64	67	67	67	67	67	68	--	65
Minimum	60	61	62	64	62	62	62	62	64	65	66	64	64	66	64	63	63	61	60	60	62	63	63	64	64	66	65	64	67	67	--	63
July																																
Maximum	68	68	68	67	69	70	70	71	71	69	68	68	68	69	69	69	69	69	68	69	70	70	68	70	70	70	70	71	71	70	70	69
Minimum	66	67	66	65	67	68	68	69	69	68	66	67	67	67	69	67	66	67	67	67	68	68	67	67	69	68	70	70	68	67	67	67
August																																
Maximum	69	67	68	68	68	68	69	69	69	69	69	69	71	71	71	72	72	72	72	72	71	70	70	71	70	69	70	70	70	68	67	70
Minimum	66	66	65	65	65	66	66	68	68	67	67	68	68	70	69	70	70	70	71	70	69	69	69	69	68	67	68	69	67	66	65	68
September																																
Maximum	66	65	66	66	66	68	68	68	68	69	69	69	67	67	68	68	68	68	68	68	68	68	68	67	65	61	61	61	61	61	--	66
Minimum	65	65	64	65	64	66	67	66	66	67	68	67	67	65	67	67	67	67	67	67	67	66	67	65	61	60	60	60	61	61	--	65

TENNESSEE RIVER BASIN--Continued

3-5710. SEQUATCHIE RIVER NEAR WHITWELL, TENN.

LOCATION.--Temperature recorder at gaging station on right bank, 15 feet downstream from highway bridge, 1.5 miles east of Whitwell, Marion County, 3 miles upstream from bridge on State Highway 27, 4.5 miles downstream from Griffith Creek, and at mile 25.1.
DRAINAGE AREA.--384 square miles (does not include 17.8 square miles in Grassy, Swaggerty, and Little Coves).
RECORDS AVAILABLE.--Water temperatures: March 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 76°F Aug. 17-19; minimum, 42°F Dec. 19, Jan. 17, Feb. 26.
EXTREMES, 1962-65.--Water temperatures: Maximum, 78°F on several days during July to September 1962; minimum, 35°F Dec. 23, 24, 1963, Jan. 1-3, 1964.
REMARKS.--Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	68	68	68	68	66	62	58	57	57	56	55	55	56	58	57	57	58	59	59	57	54	55	55	54	54	54	55	56	58	59	59	58
Minimum	67	67	67	66	62	58	57	56	56	54	54	54	54	56	56	56	56	57	57	54	53	53	53	52	52	52	53	55	55	57	58	57
November																																
Maximum	60	59	58	58	58	57	56	57	56	56	55	56	58	57	58	59	60	61	61	60	55	49	46	47	49	50	50	51	51	50	--	55
Minimum	58	58	57	57	57	56	55	55	55	54	54	54	56	56	56	57	59	60	60	55	49	46	45	45	47	49	49	50	50	46	--	54
December																																
Maximum	46	45	48	52	52	50	47	45	46	47	49	51	51	49	48	46	47	46	43	44	45	47	49	53	54	55	54	51	50	51	51	49
Minimum	44	43	45	48	50	47	45	44	44	45	47	49	49	48	46	45	45	43	42	43	44	45	47	49	53	54	51	50	49	49	51	47
January																																
Maximum	52	53	53	49	47	49	50	51	53	53	48	46	47	47	47	46	44	--	--	--	--	--	--	--	--	--	--	--	46	46	--	--
Minimum	51	52	49	47	47	47	49	50	51	48	46	45	46	46	46	44	42	--	--	--	--	--	--	--	--	--	--	--	45	44	--	--
February																																
Maximum	--	--	--	--	--	--	--	--	--	51	52	52	51	48	46	47	48	49	49	49	49	48	47	48	48	43	45	47	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	50	51	51	48	46	45	46	47	47	48	48	48	47	46	47	43	42	43	45	--	--	--	--
March																																
Maximum	49	51	51	51	48	45	45	45	47	47	47	47	48	48	49	50	52	51	50	48	46	47	49	51	52	52	53	54	54	54	52	49
Minimum	47	49	50	48	45	44	44	45	45	46	46	47	46	47	47	48	50	50	48	46	44	45	47	49	51	49	48	51	53	52	50	48
April																																
Maximum	51	55	55	53	57	57	59	60	64	63	62	63	62	61	59	60	59	60	60	61	61	63	64	65	64	64	63	60	58	58	--	60
Minimum	49	51	52	51	53	56	57	59	60	60	61	61	61	58	58	58	57	58	59	59	59	60	61	63	63	63	60	58	57	56	--	58
May																																
Maximum	60	61	63	64	65	65	66	66	66	67	67	66	66	66	66	66	66	66	67	68	67	67	68	67	68	70	69	68	67	67	67	66
Minimum	57	59	60	61	62	63	63	64	64	65	65	64	63	63	64	65	65	65	65	66	66	65	66	66	67	68	68	66	66	65	64	64
June																																
Maximum	68	68	69	68	67	66	66	66	67	67	67	66	67	67	66	66	65	65	65	66	67	68	69	68	69	70	70	70	70	70	--	67
Minimum	65	66	66	67	64	64	65	65	66	66	66	66	66	66	65	65	65	64	63	63	64	65	66	67	67	68	69	68	68	69	--	66
July																																
Maximum	71	70	70	69	--	--	--	--	75	75	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	73	72	72	72	73	71	73
Minimum	69	69	69	68	--	--	--	--	74	74	72	72	72	72	72	73	72	72	73	73	73	74	74	73	73	72	71	72	72	71	69	72
August																																
Maximum	71	70	68	68	68	69	70	70	71	71	71	72	73	73	75	75	76	76	76	75	74	74	74	73	73	72	72	72	71	70	69	72
Minimum	69	68	68	67	68	68	68	69	70	70	70	71	71	72	73	74	75	75	74	74	74	73	73	72	72	72	72	71	70	69	68	71
September																																
Maximum	69	69	68	69	68	69	71	72	72	73	73	72	71	69	69	70	70	70	70	72	71	71	71	71	69	65	63	64	64	64	--	69
Minimum	68	67	67	68	68	68	69	70	70	71	72	71	69	68	69	69	69	70	70	70	70	70	70	69	65	63	63	63	63	63	--	68

TENNESSEE RIVER BASIN--Continued

3-5750. FLINT RIVER NEAR CHASE, ALA.

LOCATION.--Temperature recorder at gaging station, 250 feet downstream from Nashville, Chattanooga and St. Louis Railway bridge, 0.2 mile downstream from highway bridge, 0.3 mile downstream from Brier Fork, 5 miles northeast of Chase, Madison County, and at mile 35.9.
DRAINAGE AREA.--342 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1964 to September 1965.
EXTREMES, May 1964 to September 1965.--Water temperatures: Maximum, 83°F Aug. 4, 1964, minimum, 35°F Feb. 3, 1965.
REMARKS.--No temperature reading Sept. 6-8, 14-24, 1964, Mar. 17 to Apr. 6, Apr. 27 to May 4, Aug. 27 to Sept. 3, 1965. Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, May to September 1964
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
May																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	72	73	76	76	76	74	72	68	67	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	70	68	69	70	71	70	67	65	66	--
June																																
Maximum	70	71	71	71	73	70	73	75	78	78	79	80	80	80	79	77	76	78	79	80	81	82	81	76	78	77	78	80	78	76	--	77
Minimum	65	65	66	66	66	68	67	69	71	72	73	74	74	74	74	74	73	73	73	73	75	75	75	74	73	73	73	73	75	73	--	72
July																																
Maximum	75	77	79	80	79	75	75	78	80	80	77	75	74	75	75	74	77	78	75	75	76	76	78	79	79	77	79	80	79	80	80	77
Minimum	72	72	74	74	74	72	72	72	74	76	75	72	70	70	70	71	71	73	74	73	73	73	74	75	74	74	74	75	76	75	76	73
August																																
Maximum	79	80	81	83	80	80	81	80	81	80	77	80	77	73	71	70	74	75	76	77	77	78	76	76	74	75	76	77	79	79	79	77
Minimum	75	76	76	77	77	76	76	76	75	76	76	75	71	71	69	68	68	70	71	72	73	74	74	73	71	71	72	73	74	74	75	73
September																																
Maximum	79	78	77	77	79	--	--	--	77	77	75	76	73	--	--	--	--	--	--	--	--	--	--	--	70	68	69	69	69	71	--	--
Minimum	74	72	72	74	74	--	--	--	72	72	74	71	69	--	--	--	--	--	--	--	--	--	--	--	66	66	67	68	68	68	--	--

TENNESSEE RIVER BASIN--Continued

3-5750. FLINT RIVER NEAR CHASE, ALA.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	71	71	71	71	67	63	62	62	62	61	60	60	62	62	61	61	62	63	63	60	58	60	59	58	58	59	60	60	61	62	62	62
Minimum	69	69	69	67	63	61	58	58	59	58	56	57	59	61	60	59	59	60	60	57	55	56	56	54	54	55	56	59	59	59	59	59
November																																
Maximum	63	64	62	62	62	61	60	60	59	59	60	61	64	63	63	64	64	65	65	62	56	51	48	50	52	52	54	55	54	51	--	59
Minimum	61	60	59	58	58	57	57	57	56	55	56	58	61	59	61	62	63	64	62	56	51	48	46	48	50	49	50	53	51	45	--	56
December																																
Maximum	45	46	53	56	55	49	46	46	47	50	53	55	53	49	47	46	48	46	41	44	46	50	55	58	58	57	53	49	50	53	55	50
Minimum	42	43	46	53	49	45	43	42	44	47	50	53	49	46	45	44	46	39	39	41	44	46	50	55	57	53	48	47	47	50	53	47
January																																
Maximum	--	--	55	50	50	52	54	57	57	55	47	47	49	48	47	47	40	40	42	44	47	50	54	54	52	54	51	48	47	45	41	49
Minimum	55	55	50	47	47	49	52	54	55	46	45	45	47	46	45	40	37	37	38	40	43	46	50	51	48	50	47	45	44	41	37	46
February																																
Maximum	39	38	38	41	43	46	50	53	57	57	57	57	52	46	46	47	48	50	51	50	51	48	48	48	47	45	49	53	--	--	--	48
Minimum	38	36	35	36	38	42	46	50	53	57	56	52	46	45	43	46	47	46	47	46	48	45	43	46	42	40	43	48	--	--	--	45
March																																
Maximum	54	56	56	53	47	44	44	45	50	51	51	51	51	52	56	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	52	54	53	47	44	42	43	44	44	47	47	50	48	48	50	52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
April																																
Maximum	--	--	--	--	--	--	65	65	67	66	66	69	66	63	62	63	64	66	64	65	65	67	69	70	70	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	61	63	63	63	63	65	63	60	59	59	58	60	62	60	61	63	64	66	67	--	--	--	--	--	--	--
May																																
Maximum	--	--	--	--	69	70	69	70	70	71	69	70	70	70	70	69	69	71	71	68	68	70	72	73	73	74	73	71	72	70	71	70
Minimum	--	--	--	--	65	65	65	66	66	67	67	66	65	65	66	67	67	67	67	66	66	67	68	69	70	70	71	69	69	66	66	67
June																																
Maximum	72	72	74	73	72	73	71	71	73	72	72	71	72	72	72	71	71	71	70	71	71	72	72	72	73	74	73	74	75	75	--	72
Minimum	68	68	70	71	71	70	69	68	69	71	71	70	70	71	71	71	70	69	68	68	69	69	70	71	71	72	72	72	72	73	--	70
July																																
Maximum	76	76	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	74	74	74	75	75	75	73	75
Minimum	74	73	74	73	73	72	73	72	73	73	73	73	74	73	73	73	72	72	72	73	74	74	74	74	73	73	73	73	73	72	71	73
August																																
Maximum	73	73	73	73	74	74	74	74	75	75	75	75	75	76	77	76	77	77	77	77	75	75	74	74	75	76	--	--	--	--	--	75
Minimum	71	71	70	72	72	72	72	72	72	73	72	72	73	73	73	74	74	75	75	74	74	73	73	72	73	73	--	--	--	--	--	73
September																																
Maximum	--	--	--	73	73	73	72	75	75	75	75	74	73	73	73	74	75	75	74	75	75	74	74	74	72	69	68	69	69	68	--	73
Minimum	--	--	--	71	71	70	71	72	71	73	73	72	72	70	71	72	72	73	72	72	72	73	73	72	68	66	65	65	68	67	--	71

TENNESSEE RIVER BASIN--Continued

3-5840. RICHLAND CREEK NEAR PULASKI, TENN.

LOCATION.--Temperature recorder at gaging station on right bank, 1,200 feet upstream from bridge on U.S. Highway 64, 1 mile downstream from Weakley Creek, 4 miles west of Pulaski, Giles County, and at mile 30.1.
DRAINAGE AREA.--366 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 78°F July 24, Aug. 15-19; minimum, 36°F Feb. 3.

Temperature (°F) of water, water year October 1964 to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	68	68	68	68	66	61	58	57	57	57	55	55	57	57	57	59	60	60	60	58	55	56	56	55	54	55	56	57	58	58	58	59
Minimum	66	68	67	66	61	58	55	55	56	54	53	53	55	57	57	57	57	59	58	55	53	54	54	52	52	53	53	56	56	57	56	57
November																																
Maximum	60	60	58	58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	57	57	56	56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
December																																
Maximum	--	--	51	55	55	49	48	47	48	50	53	55	55	52	49	48	50	49	43	45	47	50	54	58	58	57	53	50	51	54	54	51
Minimum	--	--	48	52	49	47	46	45	46	48	50	53	52	49	48	47	48	43	41	42	45	47	50	54	57	53	49	49	49	51	54	49
January																																
Maximum	55	56	55	50	50	52	54	56	56	52	49	49	50	50	48	47	42	42	43	45	47	50	53	53	51	52	51	47	46	45	41	50
Minimum	54	55	50	47	47	49	52	54	52	48	48	48	49	48	47	42	40	40	41	42	44	46	50	51	49	50	47	43	45	41	38	47
February																																
Maximum	39	39	38	40	42	45	49	51	55	56	58	55	52	48	48	48	50	51	51	50	50	49	47	48	47	44	48	51	--	--	--	48
Minimum	39	37	36	37	38	42	45	49	51	55	54	52	48	47	46	48	46	48	49	48	49	46	44	47	42	41	43	47	--	--	--	46
March																																
Maximum	52	54	54	50	--	--	--	--	--	--	48	48	49	49	52	52	54	54	51	47	47	49	51	51	49	48	53	54	55	53	52	51
Minimum	51	52	50	46	--	--	--	--	--	--	46	47	46	46	48	49	52	51	47	44	43	44	48	49	47	47	47	52	53	51	50	48
April																																
Maximum	52	55	55	58	59	59	60	60	63	62	62	65	63	61	60	61	62	65	65	65	65	67	69	70	70	69	64	59	58	61	--	62
Minimum	51	52	52	52	57	57	57	59	60	60	60	62	60	58	57	59	57	59	62	61	61	62	64	66	67	64	59	58	57	58	--	59
May																																
Maximum	64	65	66	66	67	67	67	68	68	70	70	69	69	69	69	69	69	71	72	72	72	73	73	74	75	76	76	74	71	70	70	70
Minimum	59	61	61	63	64	65	65	66	66	67	68	67	66	66	67	68	68	68	70	70	70	71	71	71	72	74	74	71	69	67	68	68
June																																
Maximum	72	73	74	72	72	72	69	69	70	69	68	69	71	71	71	70	69	69	69	70	70	71	71	72	72	72	72	73	74	75	--	71
Minimum	69	70	71	69	70	69	68	66	68	66	68	68	68	70	70	68	67	67	66	67	68	69	70	70	71	70	71	71	72	73	--	69
July																																
Maximum	75	75	75	74	75	75	74	76	76	75	76	76	76	77	76	76	76	76	74	75	74	76	76	78	77	75	76	76	75	73	72	75
Minimum	73	73	72	72	73	73	72	71	73	73	73	73	73	73	74	73	72	72	72	72	73	73	74	75	75	73	74	74	72	69	68	73
August																																
Maximum	73	73	73	73	75	76	75	73	75	74	74	73	75	76	78	78	78	78	78	77	77	76	76	75	76	76	76	73	72	71	73	75
Minimum	70	69	69	69	70	71	72	72	72	71	71	72	72	73	74	74	74	75	75	74	74	74	73	73	73	73	72	70	67	66	68	72
September																																
Maximum	71	70	70	70	70	72	72	73	73	73	72	70	70	71	72	72	73	73	72	72	75	74	77	68	63	58	60	62	62	63	--	70
Minimum	67	66	68	68	68	69	68	69	69	70	70	69	68	67	68	69	71	70	69	69	70	70	68	63	58	55	55	56	58	60	--	66

TENNESSEE RIVER BASIN--Continued

3-5918. BEAR CREEK NEAR HACKLEBURG, ALA.

LOCATION.--Temperature recorder at gaging station at bridge on U.S. Highway 43, 2 miles upstream from Bluff Creek, and 3.5 miles east of Hackleburg, Marion County.
DRAINAGE AREA.--143 square miles.
RECORDS AVAILABLE.--Water temperatures: March to September 1965.
EXTREMES, March to September 1965.--Water temperatures: Maximum, 83°F June 30, July, 2, 8, Aug. 17, 18.
REMARKS.--Recorder stopped Apr. 2-5, May 21 to June 7. Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, March to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
March																																
Maximum	--	--	--	--	--	--	--	--	--	47	48	48	49	50	53	54	56	56	53	48	46	48	51	53	55	55	53	57	59	58	55	--
Minimum	--	--	--	--	--	--	--	--	--	45	45	47	47	47	50	52	54	52	48	45	43	43	48	51	53	51	50	53	57	55	53	--
April																																
Maximum	54	--	--	--	--	62	62	63	68	67	68	70	68	65	63	65	64	66	65	66	67	69	71	72	72	73	70	65	64	66	--	66
Minimum	53	--	--	--	--	60	60	62	63	66	65	68	65	61	61	61	59	61	65	62	62	64	65	67	69	70	65	62	59	59	--	63
May																																
Maximum	66	68	68	68	69	69	69	71	71	73	71	73	73	73	75	73	73	75	74	73	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	63	60	63	62	63	63	63	64	65	66	67	65	64	65	66	69	69	70	70	71	--	--	--	--	--	--	--	--	--	--	--	--
June																																
Maximum	--	--	--	--	--	--	--	73	74	75	74	71	72	71	72	71	71	72	73	74	75	77	75	78	79	79	77	79	82	83	--	--
Minimum	--	--	--	--	--	--	--	67	69	71	70	69	68	70	70	69	69	68	67	67	68	70	71	72	73	74	75	74	75	76	--	--
July																																
Maximum	82	83	79	81	80	81	80	83	81	81	80	80	79	81	79	76	78	81	79	81	80	81	81	81	78	77	77	78	80	80	--	80
Minimum	77	76	77	76	75	74	75	75	77	77	76	74	76	75	76	72	72	73	74	75	76	76	77	77	76	73	74	75	76	73	--	75
August																																
Maximum	78	79	80	78	80	79	80	76	79	74	75	75	78	80	82	82	83	83	81	80	81	77	76	76	79	80	81	79	78	77	77	79
Minimum	73	71	72	73	74	74	73	73	72	71	70	72	73	74	75	77	77	79	76	76	76	76	75	74	74	75	75	75	72	70	74	74
September																																
Maximum	77	74	73	73	74	75	76	77	76	76	75	75	76	76	77	78	79	77	78	78	79	78	77	75	71	66	58	59	59	59	--	75
Minimum	74	71	72	72	72	71	71	72	71	74	73	72	71	71	73	74	75	74	74	73	74	75	75	71	66	63	64	64	67	68	--	71

TENNESSEE RIVER BASIN--Continued

3-5922. CEDAR CREEK NEAR PLEASANT SITE, ALA.

LOCATION.--Temperature recorder at gaging station at highway bridge, 2.6 miles east of Pleasant Site, Franklin County, and 4.3 miles upstream from Little Bear Creek.
DRAINAGE AREA.--189 square miles.
RECORDS AVAILABLE.--Water temperatures: January 1963 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 85°F Aug. 17, 18; minimum, freezing point Feb. 3.
EXTREMES, 1963-65.--Water temperatures: Maximum, 85°F June 21-23, 1964, Aug. 17, 18, 1965; minimum freezing point on many days during winter months in previous years.
REMARKS.--Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, water year October 1964 to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	73	74	74	74	68	64	60	60	61	60	58	59	61	61	61	63	64	65	64	61	58	59	59	58	57	58	59	61	62	63	62	63
Minimum	71	73	73	68	64	60	57	56	58	56	54	55	58	59	60	60	60	60	61	56	53	55	55	54	53	54	55	59	59	60	58	59
November																																
Maximum	63	63	61	61	61	61	60	59	58	58	58	62	65	64	65	66	66	66	66	61	54	46	44	48	50	50	55	57	56	51	--	58
Minimum	60	60	58	58	59	57	58	57	55	54	55	58	62	61	62	64	65	65	61	54	46	44	41	44	48	47	49	55	51	44	--	55
December																																
Maximum	44	47	56	57	55	48	44	43	44	49	56	56	56	52	48	48	51	48	42	45	47	51	56	61	60	59	55	50	51	56	58	51
Minimum	41	42	47	55	48	44	41	40	42	44	49	56	52	47	45	45	48	42	40	42	45	47	51	56	57	55	50	49	48	51	56	48
January																																
Maximum	61	60	58	52	50	52	57	59	59	56	49	47	50	49	47	46	38	38	39	41	46	52	56	56	50	53	50	45	45	45	38	50
Minimum	58	58	52	47	46	50	52	57	56	49	47	44	47	46	45	38	35	35	36	38	41	45	52	49	46	50	44	42	43	38	35	46
February																																
Maximum	37	36	35	37	40	45	49	53	58	57	58	57	50	48	48	48	50	50	50	51	51	49	47	48	46	45	49	53	--	--	--	48
Minimum	36	34	32	33	35	40	45	49	53	55	55	50	48	46	44	47	48	46	46	47	49	45	42	46	40	38	42	48	--	--	--	44
March																																
Maximum	53	54	53	49	44	43	44	45	48	48	49	49	50	52	55	55	57	57	54	48	47	51	54	54	54	52	55	59	59	57	55	52
Minimum	53	53	49	44	42	41	43	43	42	45	46	48	47	46	50	51	55	54	48	44	41	44	51	50	50	49	48	54	57	54	51	48
April																																
Maximum	59	61	61	61	63	63	65	66	69	68	70	71	69	66	65	64	64	67	67	66	67	69	71	72	72	72	69	64	62	63	--	66
Minimum	53	54	56	56	59	61	60	62	63	64	66	67	64	61	61	61	58	61	65	60	61	63	65	67	68	69	64	60	56	57	--	61
May																																
Maximum	66	67	68	69	71	70	71	72	72	74	73	74	72	72	73	73	72	74	74	74	75	74	75	77	79	79	79	75	74	73	75	73
Minimum	59	61	63	64	66	66	66	67	68	69	71	69	67	66	67	68	69	70	70	72	70	72	70	70	73	74	75	72	70	68	69	68
June																																
Maximum	75	76	79	80	81	78	76	76	77	78	77	75	77	78	77	76	73	73	72	74	75	76	75	76	76	77	77	77	79	80	--	77
Minimum	71	72	74	76	77	76	73	70	72	74	74	73	72	75	75	71	71	69	67	67	69	71	73	71	72	72	74	73	74	76	--	72
July																																
Maximum	79	80	80	80	79	78	79	80	80	80	81	80	79	81	80	82	82	82	80	81	80	82	84	84	78	79	79	80	80	79	78	80
Minimum	75	75	78	76	75	74	74	75	76	77	76	76	77	75	76	76	75	76	76	75	76	77	78	75	74	76	76	76	77	75	73	76
August																																
Maximum	79	79	80	80	80	79	79	78	79	79	80	78	77	79	82	83	85	85	84	81	80	79	78	76	78	80	80	78	76	75	77	79
Minimum	75	72	73	73	74	75	75	76	73	74	73	75	74	74	77	78	79	79	79	78	76	76	76	73	73	75	76	75	73	70	73	75
September																																
Maximum	77	75	75	74	74	75	75	76	77	77	75	73	75	76	77	78	78	79	79	78	79	80	76	74	69	64	65	67	68	69	--	74
Minimum	74	71	73	73	73	73	72	73	72	75	72	71	71	72	72	74	76	76	75	75	75	76	74	69	64	62	62	63	66	68	--	71

TENNESSEE RIVER BASIN--Continued

3-5923. LITTLE BEAR CREEK NEAR HALLTOWN, ALA.

LOCATION.--Temperature recorder at gaging station at highway bridge, 2.7 miles northeast of Halltown, Franklin County, and 4.2 miles upstream from Cedar Creek.
DRAINAGE AREA.--78.2 square miles.
RECORDS AVAILABLE.--July 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 84°F July 24, Aug. 18; minimum, 34°F Feb. 3, 4.
EXTREMES, 1962-65.--Water temperatures: Maximum, 84°F July 24, Aug. 18,1965; minimum, freezing point on many days during winter months.
REMARKS.--Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, water year October 1964 to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	71	71	71	71	66	61	58	58	59	57	56	58	60	59	58	61	61	62	62	58	58	59	57	56	57	57	58	58	60	60	60	61
Minimum	67	70	69	66	60	57	54	54	55	52	51	53	56	56	57	57	56	58	57	54	52	53	52	51	51	52	52	56	55	56	56	56
November																																
Maximum	61	61	59	59	59	59	57	57	57	57	57	60	63	61	64	64	63	64	64	57	52	46	43	46	50	50	54	56	55	49	--	57
Minimum	58	56	55	56	56	54	55	54	52	52	52	56	57	57	60	61	62	63	56	52	46	43	40	43	46	47	48	53	49	43	--	53
December																																
Maximum	44	46	52	54	52	48	44	42	43	46	54	54	54	50	46	46	48	47	41	44	46	50	54	59	58	57	53	50	50	54	56	50
Minimum	41	41	46	52	48	44	40	38	39	43	46	54	50	45	43	44	45	41	40	41	44	46	50	54	56	53	49	47	47	50	54	46
January																																
Maximum	59	58	56	49	48	51	55	58	58	56	49	48	50	49	47	46	40	41	42	43	47	51	55	55	52	54	50	48	47	45	40	50
Minimum	56	56	49	46	45	49	51	55	56	49	47	45	47	47	46	40	38	37	37	38	41	45	51	50	48	50	45	43	43	40	37	46
February																																
Maximum	39	39	39	40	42	45	50	54	57	57	58	57	52	49	49	49	51	52	50	50	51	48	48	47	45	44	48	51	--	--	--	49
Minimum	36	35	34	34	35	40	45	50	54	56	56	52	49	47	45	48	49	47	48	47	48	44	42	45	41	39	42	47	--	--	--	45
March																																
Maximum	52	52	51	48	44	43	44	45	48	49	49	49	50	51	54	55	57	55	52	48	48	50	53	53	55	53	54	59	58	56	54	51
Minimum	51	51	48	44	41	41	43	43	43	45	46	48	46	46	50	52	54	52	48	45	42	44	49	51	51	50	49	54	56	52	51	48
April																																
Maximum	57	59	58	59	61	61	62	63	67	65	67	70	67	63	63	64	64	67	66	67	68	70	72	73	72	70	67	63	63	65	--	65
Minimum	53	53	55	55	58	59	58	60	61	62	64	65	62	60	60	60	57	59	62	61	60	61	63	64	66	67	62	58	55	54	--	60
May																																
Maximum	67	68	69	68	69	69	69	70	69	72	70	72	71	71	73	70	71	73	72	72	74	73	74	75	77	78	76	74	74	73	74	72
Minimum	56	57	59	61	62	63	63	64	65	66	67	67	64	64	66	68	68	69	69	70	69	70	69	69	71	72	72	70	69	66	68	66
June																																
Maximum	74	76	78	78	78	76	73	75	75	76	74	74	75	75	75	74	74	74	74	75	75	76	75	76	76	78	76	78	79	80	--	76
Minimum	68	70	71	72	73	73	71	68	71	71	72	71	70	72	73	72	71	69	67	67	68	70	71	71	72	71	73	72	73	74	--	71
July																																
Maximum	79	79	80	80	79	79	79	80	79	80	81	80	78	78	77	81	81	81	79	80	76	83	83	84	80	80	82	81	82	80	79	80
Minimum	73	73	76	74	74	73	73	73	75	75	74	73	74	72	73	73	72	72	72	72	73	76	77	76	75	76	76	75	76	73	70	74
August																																
Maximum	80	79	80	78	79	79	80	78	77	80	79	77	78	81	83	83	83	84	82	80	81	77	76	75	78	78	79	77	77	76	78	79
Minimum	73	70	71	71	72	73	74	75	73	72	71	73	72	73	74	75	77	78	78	76	76	75	74	73	73	73	74	74	71	70	73	73
September																																
Maximum	77	75	74	74	77	75	77	76	77	77	75	74	76	75	79	79	80	80	80	80	78	80	75	75	67	65	67	69	68	70	--	75
Minimum	74	70	72	72	72	72	70	70	69	73	73	71	71	71	72	73	74	74	74	73	74	75	74	69	65	63	63	63	66	67	--	71

TENNESSEE RIVER BASIN--Continued

3-5925. BEAR CREEK AT BISHOP, ALA.

LOCATION.--Temperature recorder at gaging station, 20 feet upstream from highway bridge, 0.5 mile downstream from Cedar Creek, 0.8 mile southwest of Bishop, Colbert County, and at mile 27.3

DRAINAGE AREA.--667 square miles.

RECORDS AVAILABLE.--Water temperatures: February 1962 to September 1965.

EXTREMES, 1964-65.--Water temperatures: Maximum, 86°F July 24; minimum, 37°F Feb. 3, 4.

EXTREMES, 1962-65.--Water temperatures: Maximum, 86°F July 13, 1962, July 24, 1965; minimum, freezing point Dec. 26, 27, 1963, Jan. 1-3, 1964.

REMARKS.--Recorder stopped Aug. 7-22. Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, water year October 1964 to September 1965
(Recorder with temperature attachment, continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	71	71	72	72	71	66	65	62	62	61	60	60	60	61	62	64	64	64	64	63	61	60	60	60	59	60	60	61	62	63	63	63
Minimum	70	71	71	70	66	65	62	61	61	60	59	59	60	60	61	62	62	62	63	61	59	60	59	59	58	59	59	59	60	61	61	62
November																																
Maximum	63	63	63	63	63	62	62	61	60	59	59	60	61	62	63	64	64	63	64	62	57	52	48	47	49	49	50	55	55	52	--	58
Minimum	62	62	62	62	62	61	61	60	59	58	58	58	60	60	62	63	63	63	62	57	52	48	46	46	47	48	48	50	52	50	--	57
December																																
Maximum	50	46	48	51	51	49	48	46	46	46	53	55	55	53	49	48	48	48	45	44	45	47	50	56	57	57	56	53	51	54	55	50
Minimum	46	45	46	48	49	48	46	44	44	45	46	53	53	49	48	47	48	45	43	43	44	45	47	50	56	56	53	51	50	51	54	48
January																																
Maximum	56	58	58	55	52	50	52	55	56	55	52	51	49	49	48	47	43	40	40	41	42	46	50	52	51	52	52	50	48	47	45	50
Minimum	55	56	55	52	50	50	50	52	55	52	50	49	48	48	47	43	40	40	39	40	40	42	46	50	49	50	50	48	47	45	42	48
February																																
Maximum	42	40	39	39	40	42	46	48	55	57	59	59	55	50	49	48	49	49	51	51	51	50	49	49	48	45	47	49	--	--	--	48
Minimum	40	39	37	37	38	40	42	46	48	55	57	55	50	49	47	47	48	48	49	50	50	49	47	48	45	43	44	47	--	--	--	46
March																																
Maximum	52	53	53	52	49	46	45	45	47	48	49	50	51	51	53	54	57	57	56	52	50	49	50	51	51	51	52	57	58	58	56	52
Minimum	49	52	52	49	46	45	45	45	45	47	48	49	49	49	50	52	54	56	52	50	48	47	49	50	51	49	49	52	57	56	54	50
April																																
Maximum	58	59	59	59	63	63	63	64	67	66	68	69	69	67	65	65	64	65	66	66	66	68	70	72	72	72	70	68	65	65	--	66
Minimum	56	58	58	57	59	62	62	63	64	65	66	68	67	64	64	63	62	63	65	64	64	65	67	69	70	70	68	65	63	63	--	64
May																																
Maximum	67	68	69	70	71	72	72	73	73	74	74	74	74	73	74	74	71	73	73	74	75	76	75	77	78	77	77	76	75	75	75	74
Minimum	63	64	65	66	67	68	69	70	70	71	72	72	71	71	72	70	69	70	72	73	74	74	74	74	75	77	76	74	74	72	73	71
June																																
Maximum	75	75	78	79	80	78	76	77	77	77	77	76	76	75	75	74	74	74	74	74	74	76	76	77	77	78	79	79	80	82	--	77
Minimum	74	74	75	76	78	76	75	74	75	75	75	74	74	74	74	73	72	72	71	71	72	74	74	74	76	76	77	78	78	79	--	75
July																																
Maximum	83	83	84	84	81	80	80	81	81	81	84	84	83	82	82	83	83	81	81	81	83	84	85	86	81	80	81	81	81	81	80	82
Minimum	79	79	80	81	80	79	79	79	80	80	81	80	80	80	80	80	79	79	79	79	79	80	81	81	79	78	78	79	79	79	78	79
August																																
Maximum	80	81	83	83	84	82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	81	80	78	80	80	80	79	79	78	--
Minimum	78	77	77	78	78	78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	80	78	76	78	78	78	78	77	77	--
September																																
Maximum	79	79	77	77	77	77	78	79	83	80	78	76	76	77	78	79	80	85	82	82	81	81	78	77	74	70	69	71	69	70	--	77
Minimum	77	77	76	76	76	76	76	77	77	77	76	75	74	75	76	77	78	79	78	78	78	78	76	74	70	68	67	68	68	68	--	75

TENNESSEE RIVER BASIN--Continued

3-6025. PINEY RIVER AT VERNON, TENN.

LOCATION.--Temperature recorder at gaging station on left bank, 350 feet upstream from county highway bridge, 400 feet upstream from Pretty Creek, 0.2 mile northwest of Vernon, Hickman County, 2.2 miles downstream from Mill Creek, 6.6 miles north of Centerville, and 8.4 miles upstream from mouth.
DRAINAGE AREA.--193 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 75°F Aug. 15; minimum, 34°F Feb. 4.
EXTREMES, June 1964 to September 1965.--Water temperatures: Maximum, 76°F July 9, 10, 1964; minimum, 34°F Feb. 4, 1965.
REMARKS.--Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	64	65	65	65	63	59	56	56	58	58	54	55	58	59	59	60	60	59	59	58	54	55	55	54	54	54	56	57	58	58	58	58
Minimum	62	64	64	63	59	55	54	54	56	54	51	53	55	57	58	58	58	57	58	54	51	53	52	51	51	52	53	56	56	57	55	56
November																																
Maximum	--	58	57	57	57	57	55	56	55	54	54	58	60	57	58	59	61	61	59	55	50	45	42	46	49	49	52	55	54	49	--	54
Minimum	--	56	55	55	56	55	54	54	53	52	52	54	57	54	55	58	59	59	55	50	45	42	40	42	46	47	48	52	49	43	--	52
December																																
Maximum	43	47	52	53	51	48	47	47	47	49	52	53	53	50	46	46	49	48	40	44	45	48	53	57	57	54	50	49	50	55	55	50
Minimum	39	41	47	51	48	47	44	44	45	47	49	52	50	45	44	44	46	40	39	40	44	45	48	53	52	50	47	47	47	50	52	46
January																																
Maximum	54	55	54	49	49	52	54	56	56	47	47	48	48	48	46	46	40	42	41	43	45	49	52	52	49	49	48	43	44	42	39	48
Minimum	51	54	49	44	46	49	52	54	47	45	44	45	47	45	43	40	37	39	38	40	42	45	49	49	46	48	43	41	42	39	36	45
February																																
Maximum	38	43	49	37	40	45	48	50	58	58	57	55	51	48	48	48	50	50	50	50	49	47	47	48	46	47	51	53	--	--	--	49
Minimum	37	35	35	34	36	40	45	48	50	57	54	51	47	45	44	47	48	47	48	46	47	43	43	46	41	42	45	49	--	--	--	45
March																																
Maximum	53	53	52	48	45	46	47	47	49	49	48	50	51	50	52	52	56	56	49	47	48	51	53	53	49	47	53	55	55	52	55	51
Minimum	52	52	48	45	44	45	46	46	45	46	45	48	48	47	47	49	52	49	45	43	43	45	51	49	47	44	46	50	52	50	49	47
April																																
Maximum	55	57	56	60	60	60	62	61	64	62	63	65	63	60	61	61	61	64	63	62	63	65	66	67	67	67	63	58	60	62	--	62
Minimum	51	54	52	52	55	57	56	57	60	58	60	61	57	57	56	57	56	59	60	57	59	61	62	64	65	63	58	56	55	57	--	58
May																																
Maximum	64	66	65	65	67	67	66	67	67	66	66	67	66	66	67	67	65	67	69	68	67	68	68	70	70	71	71	69	66	66	68	67
Minimum	60	62	62	63	64	64	64	64	65	65	65	64	63	63	65	65	64	65	66	67	66	66	66	67	68	69	68	66	64	63	64	65
June																																
Maximum	69	70	71	71	71	71	69	70	71	71	71	70	70	70	70	66	68	68	68	68	69	70	70	69	70	70	70	71	73	73	--	70
Minimum	66	67	68	69	69	69	68	67	68	69	69	68	68	69	66	65	64	66	65	65	66	68	68	68	68	68	69	69	70	71	--	68
July																																
Maximum	73	73	72	73	73	73	74	74	72	73	73	73	72	73	72	72	72	73	72	73	72	73	73	74	74	74	74	73	74	72	70	73
Minimum	71	70	70	70	71	71	71	72	71	71	71	70	70	71	71	70	70	70	70	70	70	71	71	72	72	72	72	72	71	69	68	71
August																																
Maximum	72	72	71	72	72	73	72	71	72	71	72	71	72	74	75	73	74	74	73	74	74	74	74	72	73	74	74	72	70	69	71	72
Minimum	69	69	69	69	70	71	71	70	70	69	69	70	70	71	72	72	71	72	72	72	72	72	72	71	71	72	72	70	68	66	68	70
September																																
Maximum	72	69	69	69	70	71	71	71	72	71	70	70	70	70	70	71	72	71	70	71	72	72	71	69	63	61	63	64	65	66	--	69
Minimum	69	67	68	68	69	69	69	69	69	70	70	69	69	69	69	69	70	70	69	69	70	71	69	63	60	60	60	62	63	65	--	67

TENNESSEE RIVER BASIN--Continued

3-6040. BUFFALO RIVER NEAR FLAT WOODS, TENN.

LOCATION.--Temperature recorder at gaging station on right bank, 0.5 mile downstream from Little Opossum Creek and bridge on State Highway 13, 1.3 miles north of Flat Woods, Perry County, 3.9 miles upstream from Sinking Creek, and at mile 58.7.
DRAINAGE AREA.--447 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 82°F July 24; minimum, 33°F Feb. 3.
EXTREMES, June 1964 to September 1965.--Water temperatures: Maximum, 84°F Aug. 4, 1964; minimum, 33°F Feb. 3, 1965.
REMARKS.--Records furnished by Tennessee Valley Authority.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	67	68	68	68	65	61	60	59	60	58	57	59	60	61	61	62	62	63	62	61	58	59	58	57	57	57	58	59	60	60	60	61
Minimum	65	67	66	65	61	59	57	57	58	56	54	55	58	59	60	60	60	60	61	58	56	57	56	55	55	55	55	58	5'	59	58	59
November																																
Maximum	60	61	60	59	60	60	59	59	58	57	57	59	60	59	61	62	62	62	62	59	55	50	46	46	48	49	52	54	53	51	--	57
Minimum	58	58	58	58	58	58	57	57	56	55	55	56	58	57	58	60	62	62	59	55	50	46	44	44	46	47	48	52	51	46	--	54
December																																
Maximum	46	45	52	53	53	49	47	45	46	47	51	53	53	51	48	46	47	46	42	41	44	47	50	55	55	55	52	48	49	52	52	49
Minimum	43	43	45	52	49	47	45	44	44	46	47	51	51	48	46	45	46	42	40	40	41	44	47	50	54	52	48	47	47	49	52	47
January																																
Maximum	54	55	54	50	47	48	52	54	55	52	48	46	47	47	46	45	40	39	39	41	43	47	51	51	50	50	48	46	45	43	40	48
Minimum	52	54	50	47	46	47	48	52	52	48	46	45	46	46	45	40	39	38	38	39	40	43	47	49	48	48	46	44	43	40	37	45
February																																
Maximum	37	37	36	37	39	42	46	49	55	57	56	55	51	47	46	46	47	49	49	49	49	46	46	46	43	43	47	50	--	--	--	46
Minimum	37	35	33	34	36	39	42	46	49	55	55	51	47	45	44	45	46	46	47	47	46	44	43	43	42	40	42	46	--	--	--	44
March																																
Maximum	51	52	51	48	45	43	44	45	46	47	47	49	50	49	52	51	55	54	52	49	47	48	50	50	49	48	48	52	54	53	52	49
Minimum	50	51	48	45	43	42	43	44	43	45	46	47	47	48	48	50	51	52	49	46	44	45	48	49	47	46	45	48	52	52	50	47
April																																
Maximum	54	56	56	57	59	59	62	63	66	65	66	66	65	64	62	62	62	65	64	64	66	68	70	71	71	70	67	62	59	61	--	63
Minimum	52	53	54	53	57	59	58	61	62	63	63	64	63	60	60	59	59	61	63	61	62	63	65	66	68	67	62	59	57	57	--	60
May																																
Maximum	64	66	67	68	69	69	70	71	70	70	70	70	71	72	72	71	70	72	72	72	72	73	74	76	76	76	76	74	70	70	71	71
Minimum	59	61	63	64	65	66	66	67	68	69	68	67	67	67	69	70	69	68	70	70	70	70	71	72	73	73	73	70	69	67	68	68
June																																
Maximum	73	75	76	76	76	76	75	75	77	77	76	74	75	75	74	72	71	71	72	72	74	75	74	74	75	76	76	76	79	79	--	75
Minimum	70	70	73	74	75	75	73	72	73	76	74	73	72	73	72	69	67	69	69	69	69	71	72	72	72	72	74	74	74	77	--	72
July																																
Maximum	79	80	79	77	77	78	79	79	78	79	80	80	80	80	80	80	80	81	80	78	78	80	81	82	81	78	80	79	80	79	79	79
Minimum	76	76	76	75	75	75	75	76	76	76	77	76	76	77	78	76	76	76	77	76	75	76	77	78	78	77	76	77	76	75	73	76
August																																
Maximum	77	78	78	79	80	80	80	77	79	79	78	77	76	79	80	79	80	80	80	80	80	81	79	78	80	81	80	77	75	76	77	79
Minimum	74	73	74	74	75	76	77	75	75	75	75	74	74	74	75	76	76	77	77	77	77	77	77	76	76	76	77	75	73	71	73	75
September																																
Maximum	77	75	73	73	74	75	77	78	79	77	76	74	75	74	76	77	77	78	77	77	78	76	74	72	68	65	67	67	67	68	--	74
Minimum	75	70	72	72	73	72	73	74	74	75	73	72	72	72	72	73	74	74	74	74	74	74	72	68	65	63	62	63	65	66	--	71

OHIO RIVER MAIN STEM

3-6115. OHIO RIVER AT METROPOLIS, ILL.

LOCATION.--Temperature recorder at gaging station near center span on downstream side of pier of Paducah and Illinois Railroad bridge at Metropolis, Massac County, 9.5 miles downstream from Tennessee River, and 37 miles upstream from mouth.
DRAINAGE AREA.--203,000 square miles, (approximately).
RECORDS AVAILABLE.--Chemical analyses: October 1952 to September 1953.
Water temperatures: March 1954 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 85°F July 25-30; minimum, 35°F Feb. 3-7.
EXTREMES, 1954-65.--Water temperatures: Maximum, 88°F Aug. 3-6, 1955; minimum, freezing point on many days during February 1958 and January and February 1963.
REMARKS.--Flow partly regulated by many dams and reservoirs. Recorder stopped Nov. 4 to Dec. 3; range in temperature 47°F to 62°F.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	70	70	70	70	70	69	68	67	66	65	65	64	63	63	63	64	64	64	64	64	63	62	62	62	61	61	61	61	61	61	61	64
Minimum	70	70	70	70	69	66	67	66	65	65	64	63	63	63	63	63	63	64	64	63	62	62	62	61	61	61	61	61	61	61	61	64
November																																
Maximum	61	61	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	61	61	61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
December																																
Maximum	--	--	--	47	47	47	47	46	45	45	46	46	46	46	46	46	45	45	44	43	42	42	42	43	43	43	43	43	42	43	43	44
Minimum	--	--	--	47	47	47	46	45	45	45	45	46	46	46	46	45	45	44	43	42	42	41	41	41	43	43	43	42	42	42	43	44
January																																
Maximum	44	44	44	44	44	44	44	46	46	46	45	45	44	44	44	44	43	42	41	39	39	38	39	40	40	42	42	41	41	41	40	43
Minimum	43	44	44	44	44	44	44	44	46	45	45	44	44	44	44	43	42	41	39	39	38	38	38	39	40	40	41	41	41	40	39	42
February																																
Maximum	39	38	37	35	35	35	36	37	38	42	42	42	42	42	41	40	40	41	42	42	42	42	41	41	41	40	38	38	--	--	--	40
Minimum	38	37	35	35	35	35	35	36	37	38	42	42	42	41	40	40	40	40	41	42	42	41	41	41	40	38	37	37	--	--	--	39
March																																
Maximum	39	40	40	40	40	40	40	40	40	40	40	40	40	40	40	42	43	43	44	44	43	42	43	43	43	43	42	42	42	43	43	41
Minimum	38	39	40	40	40	40	40	40	40	40	40	40	40	40	40	40	42	43	43	43	42	42	42	43	43	42	42	42	42	42	43	41
April																																
Maximum	44	45	45	45	46	47	49	50	51	52	52	54	54	54	54	54	54	54	55	55	56	57	56	60	62	63	63	63	64	64	--	54
Minimum	43	44	45	45	45	46	47	49	50	51	52	52	54	54	54	54	54	54	54	55	55	56	57	58	60	62	63	63	63	64	--	53
May																																
Maximum	64	64	64	64	66	67	68	69	69	70	71	71	71	72	73	73	73	74	74	74	74	75	75	75	76	76	76	76	76	76	76	72
Minimum	64	64	64	64	64	66	67	68	69	69	70	71	71	71	72	73	73	73	74	74	74	74	75	75	75	76	76	76	76	76	76	71
June																																
Maximum	76	76	77	77	78	78	78	77	77	78	79	79	80	80	80	79	79	79	79	79	79	79	79	79	79	79	80	80	82	82	--	79
Minimum	76	76	76	77	76	78	77	77	77	77	78	79	79	80	79	79	79	79	79	79	79	79	79	79	79	79	79	80	80	82	--	78
July																																
Maximum	82	82	82	82	82	82	81	82	81	81	81	81	81	81	82	82	82	82	82	82	82	83	84	84	85	85	85	85	85	85	83	83
Minimum	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81	82	82	82	82	82	82	82	83	84	84	85	85	85	85	83	83	82
August																																
Maximum	83	82	82	82	83	83	83	83	82	82	82	82	82	81	82	82	82	82	82	82	82	82	82	82	82	82	82	82	81	81	80	82
Minimum	82	82	82	82	82	83	83	82	82	82	82	82	81	81	81	82	82	82	82	82	82	82	82	82	82	82	82	81	81	80	79	82
September																																
Maximum	80	80	80	79	78	78	78	79	79	79	79	79	78	77	77	78	78	78	79	79	79	79	78	78	78	76	76	75	74	74	--	78
Minimum	79	80	79	78	78	78	78	78	79	79	79	78	77	77	77	77	78	78	78	79	79	78	78	78	76	76	75	74	74	74	--	78

OHIO RIVER MAIN STEM--Continued

3-6125. OHIO RIVER AT LOCK AND DAM 53, NEAR GRAND CHAIN, ILL.

LOCATION.--About 1,500 feet upstream from dam, lock and dam 53, near Grand Chain, Pulaski County, 7,300 feet downstream from Bledsoe Creek, 18.5 miles downstream from gaging station at Metropolis, and 29.7 miles downstream from Tennessee River.
DRAINAGE AREA.--203,100 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1965.
Water temperatures: October 1954 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 563 micromhos Nov. 30; minimum daily, 201 micromhos Sept. 12.
Water temperatures: Maximum, 85°F July 25, 26; minimum, freezing point Feb. 25, 26.
EXTREMES, 1954-65.--Specific conductance: Maximum daily, 684 micromhos Nov. 16, 1962; minimum daily, 170 micromhos Feb. 9, 1957.
Water temperatures (1954-62, 1963-65): Maximum, 88°F July 15, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, and (3) maximum daily specific conductance for each 10-day period. For the months of December and February only the maximum and minimum daily specific conductance for each month is given. Records of discharge are given for gaging station at Metropolis.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Detergent (MBAS)
Oct. 9, 1964.	117000					--	--				--		72	--	--	--	0.22	--	--	--		386	7.3		0.0
Oct. 11......	89500					41	8.2				66		68	40	0.2	3.4	--	262	136	82		398	7.7		--
Oct. 23......	90300					--	--				--		66	--	--	--	.26	--	--	--		364	7.7		.0
Oct. 31......	103000					28	6.9				68		38	21	.1	1.8	--	163	98	43		266	7.6		--
Nov. 5.......	90300					29	6.5				66		34	22	.1	2.6	--	168	100	46		264	7.6		--
Nov. 6.......	82400					--	--				--		47	--	--	--	.40	--	--	--		308	7.7		.0
Nov. 20......	107000					--	--				--		42	--	--	--	.24	--	--	--		306	7.6		.0
Nov. 30......	196000					57	11				78		106	62	.3	8.4	--	365	187	73		563	7.6		--
Dec. 4.......	216000					52	12				74		95	63	.3	7.1	--	328	179	119		545	7.0		--
Dec. 6.......	332000					41	10				86		68	27	.2	3.2	--	228	143	72		391	7.8		--
Feb. 25, 1965	342000					37	7.3				72		55	22	.1	6.4	--	202	123	64		304	7.1		--
Feb. 28......	333000					41	10				86		62	24	.1	9.4	--	223	143	72		350	7.2		--
Mar. 1.......	370000					--	--				--		63	--	--	--	.17	--	--	--		329	7.3		.0
Mar. 4.......	471000					34	8.8				72		59	16	.1	6.1	--	192	121	62		302	7.3		--
Mar. 20......	341000					--	--				--		73	--	--	--	.16	--	--	--		370	7.2		.1
Mar. 21......	330000					42	12				86		75	20	.1	7.6	--	247	155	34		374	7.3		--
Apr. 1.......	864000					--	--				--		56	--	--	--	.59	--	--	--		333	7.1		.0
Apr. 5.......	862000					23	7.2				48		47	10	.2	3.5	--	150	87	48		217	7.2		--
Apr. 15......	616000					--	--				--		62	--	--	--	.17	--	--	--		316	7.3		.0
Apr. 29......	383000					38	12				92		55	17	.2	5.4	--	217	145	69		339	7.0		--

May 8, 1965..	250000					--	--				--		52	--	--	--	.22	--	--	--		338	8.0		.0
May 14.......	167000					45	13				120		56	18	.2	7.2	--	239	166	67		369	7.5		--
May 21.......	142000					--	--				--		56	--	--	--	.27	--	--	--		355	8.2		.0
May 26.......	129000					33	9.0				90		42	14	.2	3.2	--	176	120	46		284	7.7		--
June 10......	158000					--	--				--		54	--	--	--	.40	--	--	--		343	--		.0
June 14......	113000					44	11				100		56	22	.2	8.0	--	222	155	73		369	8.0		--
June 25......	92700					32	6.3				82		28	10	.2	2.8	--	139	106	39		238	7.4		--
June 28......	81700					--	--				--		35	--	--	--	.32	--	--	--		272	--		.0
July 4.......	104000					28	6.6				80		29	13	.2	2.6	--	124	97	32		229	7.6		--
July 10......	132000					--	--				--		46	--	--	--	.28	--	--	--		315	7.9		--
July 15......	121000					--	--				--		46	--	--	--	.24	--	--	--		305	7.9		.0
July 29......	124000					44	11				104		59	30	.3	4.1	--	220	155	70		380	7.8		--
Aug. 1.......	69800					35	8.3				86		46	22	.3	5.8	--	190	122	51		321	7.1		--
Aug. 3.......	64200					26	4.9				68		26	16	.2	4.1	--	131	85	30		222	7.6		--
Aug. 18......	69100					--	--				--		41	--	--	--	.17	--	--	--		290	--		.0
Aug. 30......	73400					--	--				--		42	--	--	--	.19	--	--	--		305	--		.0
Sept. 6......	89400					52	12				86		92	54	.4	6.4	--	340	179	109		516	7.2		--
Sept. 12.....	133000					22	4.9				58		24	15	.2	2.6	--	126	75	28		201	7.2		--
Sept. 20.....	106000					--	--				--		64	--	--	--	.20	--	--	--		408	--		.0
Sept. 21.....	96300					--	--				--		60	--	--	--	.20	--	--	--		386	--		.0

OHIO RIVER MAIN STEM--Continued

3-6125. OHIO RIVER AT LOCK AND DAM 53, NEAR GRAND CHAIN, ILL.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	334	266	543		--	329	333	329	322	269	321	246
2	319	266	513		--	309	293	318	319	236	305	270
3	373	276	509		--	309	300	312	298	256	222	325
4	370	278	545		--	302	242	323	294	229	229	414
5	--	264	468		--	317	217	318	301	265	226	436
6	--	308	391		--	338	225	323	280	293	240	516
7	--	289	378		--	326	239	326	284	293	220	498
8	353	280	458		--	317	259	338	325	271	226	383
9	386	291	512		--	320	273	329	308	288	234	272
10	378	294	--		--	326	293	326	343	315	271	284
11	398	294	--		--	323	300	329	350	275	255	289
12	350	--	--		--	329	295	329	334	267	242	201
13	347	276	--		--	329	293	345	357	286	238	270
14	322	278	--		--	338	302	369	369	280	252	347
15	325	280	--		--	348	316	362	350	305	261	370
16	296	278	--		--	348	310	362	350	290	254	386
17	278	--	--		--	348	313	329	316	298	267	387
18	301	289	--		--	351	310	342	291	264	290	374
19	298	294	--		--	366	290	338	301	243	281	374
20	287	306	--		--	370	288	320	284	267	259	408
21	274	316	--		338	374	284	355	254	262	252	386
22	319	350	--		334	372	290	338	241	246	246	314
23	364	347	--		338	365	305	312	246	254	257	319
24	360	306	--		338	358	308	294	254	258	234	334
25	328	334	--		304	348	316	292	238	254	252	306
26	308	343	--		334	351	324	284	251	284	259	319
27	303	350	--		338	344	330	289	260	235	277	306
28	--	396	--		350	344	336	301	272	369	277	311
29	--	493	--		--	323	339	301	270	380	257	291
30	--	563	--		--	304	339	294	262	369	305	284
31	266	--	--		--	302	--	308	--	338	267	--
AVERAGE	329	318	--		--	336	295	323	297	281	257	340

OHIO RIVER MAIN STEM--Continued

3-6125. OHIO RIVER AT LOCK AND DAM 53, NEAR GRAND CHAIN, ILL.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	72	73	72	71	--	--	--	69	70	68	68	68	68	68	69	63	65	65	67	67	67	67	60	60	60	60	60	--	--	--	60	66
November	62	62	62	64	60	60	60	60	60	60	60	--	60	61	60	65	--	62	60	55	55	50	50	50	50	50	60	58	52	50	--	58
December	48	48	49	50	48	43	44	45	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
January	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
February	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	33	33	33	33	32	32	33	34	--	--	--	--
March	34	35	35	35	33	33	34	33	33	35	35	33	33	43	42	43	44	44	44	44	43	42	45	44	43	44	44	44	46	45	46	40
April	46	44	44	48	49	50	51	53	44	48	48	51	53	55	55	57	56	57	57	57	58	60	60	60	64	64	63	63	61	59	--	54
May	60	63	62	63	65	66	66	67	66	66	67	66	66	71	71	67	68	68	67	68	73	73	71	72	72	72	72	74	74	71	73	68
June	73	73	73	75	76	76	75	76	76	76	74	74	76	76	76	76	76	76	75	76	76	76	76	76	75	75	76	76	76	76	--	75
July	76	76	75	79	80	79	79	80	76	76	80	80	80	81	82	76	76	83	82	83	82	82	76	76	85	85	83	83	82	78	78	80
August	78	77	78	78	78	78	80	78	76	76	77	76	78	82	84	84	84	84	83	83	84	82	83	84	84	84	83	82	81	82	81	81
September	81	81	80	80	81	80	77	76	78	79	79	77	78	78	77	77	78	78	76	76	76	76	75	72	71	71	71	71	71	71	--	76

OHIO RIVER BASIN IN OHIO, LOW-FLOW INVESTIGATION

Chemical analyses, in parts per million, water year October 1964 to September 1965

Station number	Location	Date of collection	Discharge (cfs)	Flow percent duration	Iron (Fe)	Manganese (Mn)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Dissolved oxygen: Parts per million	Dissolved oxygen: Percent saturation
	BEAVER RIVER BASIN																		
3-865	Mahoning River at Alliance	Sept. 27,1965	5.6	94	--	--	166	--	35		--	--	452	327	189	758	7.4	--	--
3-895	Mill Creek near Berlin Center	Sept. 27.....	.3	94	--	--	236	--	14		--	--	632	460	266	926	7.8	--	--
3-905	Mahoning River below Berlin Dam, near Berlin Center	Sept. 27.....	76	76	--	--	83	--	30		--	--	402	247	179	556	7.1	--	--
3-915	Mahoning River at Pricetown	Sept. 29.....	137	81	--	--	78	--	44		--	--	288	201	137	490	7.4	--	--
3-920	Kale Creek near Pricetown	Sept. 29.....	.1	97	--	--	235	--	58		--	--	702	348	155	1100	7.5	--	--
3-925	West Branch Mahoning River near Newton Falls	Sept. 3......	14	73	--	--	218	--	12		--	--	414	330	151	682	7.8	--	--
3-930	Eagle Creek at Phalanx Station	Sept. 30.....	9.3	94	--	--	170	--	26		--	--	264	198	58	471	7.4	--	--
3-955	Mosquito Creek below Mosquito Creek Dam, near Cortland	Sept. 29.....	39	73	--	--	40	--	13		--	--	110	80	47	204	6.6	--	--
3-985	Mill Creek at Youngstown	Sept. 29.....	5.6	97	--	--	90	--	34		--	--	414	267	193	644	7.2	--	--
	LITTLE BEAVER CREEK BASIN																		
3-1095	Little Beaver Creek near East Liverpool	Aug. 30......	38	93	--	--	124	--	36		--	--	517	332	230	759	7.8	--	--
	YELLOW CREEK BASIN																		
3-1100	Yellow Creek near Hammondsville	Sept. 28.....	13	85	0.27	1.7	6	342	34		0.2	0.10	582	308	303	816	5.9	9.6	96
	SHORT CREEK BASIN																		
3-1115	Short Creek near Dillonvale	Sept. 22.....	45	61	--	--	134	1300	106		--	--	2310	1280	1170	2640	7.3	--	--
	CAPTINA CREEK BASIN																		
3-1140	Captina Creek at Armstrongs Mills	Sept. 28.....	11.6	79	.09	.02	160	56	15		.2	.17	264	206	58	446	7.6	11.1	108
	LITTLE MUSKINGUM RIVER BASIN																		
3-1154	Little Muskingum River at Bloomfield	Sept. 28.....	12	79	.19	.02	142	28	105		.2	.08	357	210	94	639	7.3	8.3	84

	DUCK CREEK BASIN																		
3-1158	Duck Creek at Stanleyville	Sept. 27,1965	16.2	79	.11	7.8	6	482	22		.6	.06	767	512	507	971	5.7	9.4	98
	MUSKINGUM RIVER BASIN																		
3-1160	Tuscarawas River at Clinton	Sept. 2......	72.7	56	--	--	A234	--	4570		--	--	8500	695	504	13500	8.5	--	--
3-1162	Chippewa Creek at Easton	Sept. 2......	26.5	57	--	--	201	--	192		--	--	744	286	121	1240	6.9	--	--
3-1170	Tuscarawas River at Massillon	Sept. 2......	189	50	--	--	75	--	3320		--	--	6310	964	902	10100	6.7	--	--
3-1180	Middle Branch Nimishillen Creek at Canton	Aug. 31......	5.36	80	--	--	188	--	23		--	--	425	310	156	647	7.4	--	--
3-1205	McGuire Creek below Leesville Dam, near Leesville	Sept. 13.....	14.5	50	--	--	48	--	6.0		--	--	111	65	26	153	6.7	--	--
3-1215	Indian Fork below Atwood Dam, near New Cumberland	Sept. 13.....	36.8	40	--	--	46	--	15		--	--	122	82	44	219	7.0	--	--
3-1216	Connotton Creek at New Cumberland	Sept. 28.....	41	80	12	.82	86	70	14		1.5	.06	219	148	78	350	7.6	7.6	76
3-1225	Tuscarawas River below Dover Dam, near Dover	Sept. 2......	1730	23	--	--	23	--	215		--	--	668	304	285	1030	6.3	--	--
3-1230	Sugar Creek above Beach City Dam, at Beach City	Sept. 2......	104	28	--	--	116	--	24		--	--	297	200	105	467	7.0	--	--
3-1240	Sugar Creek below Beach City Dam, near Beach City	Sept. 2......	307	23	--	--	26	--	14		--	--	483	316	294	668	6.3	--	--
3-1245	Sugar Creek at Strasburg	Sept. 2......	289	29	--	--	25	--	14		--	--	522	154	134	734	6.3	--	--
3-1250	Home Creek near New Philadelphia	Sept. 20.....	70	--	--	--	48	--	31		--	--	765	476	436	1020	6.8	--	--
3-1260	Stillwater Creek at Piedmont	Sept. 22.....	45.8	57	--	--	124	--	12		--	--	666	462	360	880	7.0	--	--
3-1270	Stillwater Creek at Tippecanoe	Sept. 22.....	79.9	60	--	--	123	--	9.0		--	--	512	340	239	673	7.0	--	--
3-1275	Stillwater Creek at Uhrichsville	Sept. 29.....	58	68	.15	.68	122	244	8.0		1.8	.08	489	357	257	691	7.6	8.2	81
3-1285	Little Stillwater Creek below Tappan Dam, at Tappan	Sept. 13.....	49.4	44	--	--	94	--	9.0		--	--	408	286	209	558	7.0	--	--
3-1290	Tuscarawas River at Newcomerstown	Sept. 29.....	460	82	.34	.49	102	215	740		8.5	.10	2030	812	728	2750	7.6	13.6	139
3-1300	Black Fork below Charles Mill Dam, near Mifflin	Sept. 13.....	20.3	88	--	--	146	--	19		--	--	276	212	92	465	7.5	--	--
3-1305	Touby Run at Mansfield	Sept. 9......	.4	85	--	--	B228	--	88		--	--	564	320	133	885	8.4	--	--
3-1315	Black Fork at Loudonville	Sept. 13.....	81	77	--	--	22	--	39		--	--	482	280	262	680	6.1	--	--
3-1320	Clear Fork at Butler	Sept. 15.....	37.1	82	--	--	218	--	14		--	--	244	232	54	436	7.6	--	--
3-1335	Clear Fork below Pleasant Hill Dam, near Perrysville	Sept. 15.....	33.2	92	--	--	174	--	12		--	--	205	178	36	360	7.6	--	--

A Includes 31 ppm carbonate (CO_3).
B Includes 8 ppm carbonate (CO_3).

OHIO RIVER BASIN IN OHIO, LOW-FLOW INVESTIGATION--Continued

OHIO RIVER LOW-FLOW INVESTIGATION—Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Station number	Location	Date of collection	Discharge (cfs)	Flow percent duration	Iron (Fe)	Manganese (Mn)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Dissolved oxygen: Parts per million	Dissolved oxygen: Percent saturation
	MUSKINGUM RIVER BASIN (Cont.)																		
3-1350	Lake Fork below Mohicanville Dam, near Mohicanville	Sept. 13,1965	23.1	75	--	--	223	--	71		--	--	449	280	97	754	7.4	--	--
3-1360	Mohican River at Greer	Sept. 14.....	163	79	--	--	85	--	30		--	--	406	268	196	632	7.3	--	--
3-1364	North Branch Kokosing River near Fredericktown	Sept. 9......	--	--	--	--	238	--	12		--	--	277	248	53	479	7.9	--	--
3-1365	Kokosing River at Mount Vernon	Sept. 9......	34	80	--	--	A220	--	10		--	--	262	236	56	450	8.3	--	--
3-1370	Kokosing River at Millwood	Sept. 9......	79	82	--	--	218	--	16		--	--	273	226	48	463	7.8	--	--
3-1390	Killbuck Creek at Killbuck	Sept. 29.....	51	89	0.10	0.04	222	52	30		3.1	0.46	333	254	72	546	7.6	7.5	75
3-1400	Mill Creek near Coshocton	Sept. 15.....	7.91	52	--	--	94	--	12		--	--	212	132	55	328	7.3	--	--
3-1405	Muskingum River near Coshocton	Aug. 31......	948	79	--	--	94	--	405		--	--	1040	490	413	1760	6.7	--	--
3-1415	Seneca Fork below Senecaville Dam, near Senecaville	Sept. 9......	1.71	95	--	--	138	--	7.0		--	--	168	154	41	314	7.7	--	--
3-1435	Wills Creek below Wills Creek Dam, at Wills Creek	Sept. 29.....	110	71	.10	1.2	56	156	10		1.0	.05	315	206	162	457	7.6	9.0	98
3-1440	Wakatomika Creek near Frazeysburg	Sept. 8......	22	70	--	--	94	--	74		--	--	246	148	71	459	7.4	--	--
3-1475	Licking River below Dillon Dam near Dillon Falls	Sept. 8......	178	--	--	--	166	--	68		--	--	373	218	82	686	7.2	--	--
3-1483	Moxahala Creek at Roseville	Sept. 7......	--	--	--	--	0	--	30		--	--	2260	1220	1220	2970	2.7	--	--
3-1486	Moxahala Creek near Zanesville	Sept. 27.....	53.6	60	13	5.0	0	910	44		1.3	.02	1350	820	820	1880	3.4	10.0	99
3-1502.5	Meigs Creek near Beverly	Sept. 27.....	13	60-70	.09	.00	174	622	6.0		.2	.08	1040	732	589	1320	7.0	10.0	104
	HOCKING RIVER BASIN																		
3-1560	Hunters Run at Lancaster	Aug. 9.......	2.8	64	--	--	262	--	16		--	--	320	251	36	544	7.7	--	--
3-1570	Clear Creek near Rockbridge	Aug. 9.......	24	68	--	--	176	--	5.0		--	--	204	176	32	344	7.6	--	--
	SHADE RIVER BASIN																		
3-1595.4	Shade River near Chester	Aug. 10......	4.4	--	--	--	0	--	22		--	--	664	265	265	830	4.3	--	--
	RACCOON CREEK BASIN																		
3-2020	Raccoon Creek at Adamsville	Sept. 10.....	--	--	--	--	0	360	250	0.4	2.2	--	912	342	342	1460	3.6	--	--
	SCIOTO RIVER BASIN																		
3-2174	Scioto River near Kenton	Aug. 13......	--	--	--	--	240	--	12		--	--	638	475	278	879	7.8	--	--

	SCIOTO RIVER BASIN (cont.)																	
3-2180	Little Scioto River above Marion	Aug. 24, 1965	.2	87			168		14				376	300	162	591	7.3	
3-2210	Scioto River below O'Shaughnessy Dam, near Dublin	Aug. 31......	4.2	99			232		18				472	356	168	708	7.3	
3-2230	Olentangy River at Claridon	Aug. 30......	6.0	74			A254		36				433	266	60	706	8.3	
3-2256	Olentangy River near Delaware	Aug. 31......	43	60			146		54				343	240	119	588	7.3	
3-2275	Scioto River at Columbus	Aug. 30......	197	64			156		54				512	282	152	822	7.0	
3-2285	Big Walnut Creek at Central College	Sept. 10.....	98	40			110		16				209	160	70	361	7.6	
3-2287	Blacklick Creek near Groveport	Aug. 13......	2.67	94			280		90				548	354	124	895	7.4	
3-2286.5	Alum Creek at Africa	Sept. 23.....	4.6	80			190	130	126				596	350	194	924	7.6	
3-2296	Walnut Creek near Ashville	Aug. 13......	31.9	84			316		35				434	329	68	706	7.3	
3-2302	Big Darby Creek at Plain City	Aug. 12......	2.63	92			213		19				484	292	117	589	6.9	
3-2303	Little Darby Creek at Chuckery	Aug. 12......	3.91	91			320		20				376	352	90	637	7.5	
3-2309	Deer Creek near Pancoastburg	Aug. 26......	12.8	68			280		16				370	314	84	610	7.9	
3-2310	Deer Creek at Williamsport	Aug. 26......	14	66			274		20				364	312	87	612	8.0	
3-2315	Scioto River at Chillicothe	Aug. 30......	451	74			204		46				464	269	122	755	7.2	
3-2325	Rocky Fork near Barretts Mills	Aug. 17......	16	77			152		6.0				165	148	24	294	7.8	
	UPPER TWIN CREEK BASIN																	
3-2372.6	Upper Twin Creek at McGaw	Aug. 16......	< .1	69+			20		4.0				67	42	26	122	7.0	
	OHIO BRUSH CREEK BASIN																	
3-2375	Ohio Brush Creek near West Union	Aug. 16......	9.1	63			204		6.0				202	202	35	378	7.9	
	WHITEOAK CREEK BASIN																	
3-2385	Whiteoak Creek near Georgetown	Aug. 17......	6.6	76			A142		6.0				167	142	26	294	8.3	
	LITTLE MIAMI RIVER BASIN																	
3-2410	South Fork Massies Creek near Cedarville	Aug. 5......	< .1	99+			234		13				292	267	74	496	7.6	

A Includes 4 ppm carbonate (CO_3).

OHIO RIVER BASIN IN OHIO, LOW-FLOW INVESTIGATION--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Station number	Location	Date of collection	Discharge (cfs)	Flow per-cent duration	Iron (Fe)	Manganese (Mn)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Non-carbonate	Specific conductance (micromhos at 25°C)	pH	Dissolved oxygen: Parts per million	Dissolved oxygen: Percent saturation
	GREAT MIAMI RIVER BASIN																		
3-2606	Great Miami River at Russells Point	Sept. 25,1965	5.55	85			341		28				461	376	96	760	7.7		
3-2607	Bokengehalas Creek near De Graff	Sept. 27.....	7.7	77			358		56				543	411	117	904	7.9		
3-2608	Stony Creek near De Graff	Sept. 27.....	10	94			325		8.0				384	338	71	624	7.9		
3-2615	Great Miami River at Sidney	Sept. 24.....	45	24			302		20				405	328	80	660	7.6		
3-2620	Loramie Creek at Lockington	Sept. 24.....	7.6	88			295		46				595	382	140	922	7.6		
3-2625	Great Miami River at Piqua	Sept. 24.....	46.5	92			A296		28				435	346	103	710	8.4		
3-2628	Lost Creek near Troy	Sept. 10.....	1.44	95			284		16				347	318	85	589	7.7		
3-2630	Great Miami River at Taylorsville	Sept. 22.....	114	82			278		35				401	305	76	670	7.5		
3-2632	Stillwater River at Webster	Sept. 8......	3.39	98			342		16				496	392	112	768	7.7		
3-2640	Greenville Creek near Bradford	Sept. 23.....	20	90			275		19				406	340	114	661	7.7		
3-2650	Stillwater River at Pleasant Hill	Sept. 23.....	42	82			245		23				370	305	104	616	7.5		
3-2700	Mad River near Dayton	Sept. 22.....	228	76			315		23				418	358	100	700	7.9		
3-2705	Great Miami River at Dayton	Sept. 21.....	422	78			258		36				369	285	73	632	7.7		
3-2708	Wolf Creek at Trotwood	Sept. 21.....	.6	87			B248		77				441	296	92	757	8.4		
3-2710	Wolf Creek at Dayton	Sept. 10.....	5.07	82			276		84				486	318	92	822	7.5		
3-2713	Holes Creek near Kettering	Aug. 24......	1.06	97			268		32				340	286	66	598	7.8		
3-2714	Bear Creek at Ellerton	Aug. 26......	.89	99			228		22				343	274	86	550	7.8		
3-2717	Clear Creek at Franklin	Aug. 24......	< .1	99+			256		28				354	286	76	591	7.3		
3-2718	Twin Creek near Ingomar	Sept. 20.....	25	65			218		15				296	239	60	491	7.6		
3-2720	Twin Creek near Germantown	Sept. 21.....	28	70			238		15				306	258	62	511	7.9		
3-2722	Elk Creek at Miltonville	Aug. 25......	.59	93			236		14				305	276	82	528	7.6		
3-2723	Dicks Creek near Excello	Aug. 25......	4.11	70			C220		62				509	232	52	828	8.6		
3-2728	Sevenmile Creek at Collinsville	Sept. 20.....	32	50			262		24				337	282	67	574	7.9		
3-2742	Indian Creek near Millville	Sept. 9......	.40	99+			260		16				315	282	68	540	7.7		
3-2746	Great Miami River at New Baltimore	Sept. 9......	467	90			208		52				504	326	155	786	7.2		

A Includes 12 ppm carbonate (CO_3).
B Includes 9 ppm carbonate (CO_3).
C Includes 16 ppm carbonate (CO_3).

MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen	Turbidity
OHIO RIVER MAIN STEM																										
3-115. ALLEGHENY RIVER AT RED HOUSE, N.Y.																										
Oct. 14, 1964	184	0.8		0.14	0.05	50	9.0	84	2.1		106	0	25	168	0.3	0.2		419	162	75		752	7.7	4		0.5
Nov. 5.......	220	.7		.17	.06	47	8.0	76	1.8		97	0	24	152	.3	.3		401	150	70		688	6.8	4		.5
Dec. 9.......	756	4.0		.21	.05	27	5.5	38	1.6		56	0	20	75	.1	7.9		203	90	44		386	6.9	2		.9
Jan. 6, 1965.	1810	4.3		.22	.07	18	3.6	20	1.2		38	0	16	40	.1	.5		122	60	29		237	6.8	3		.5
Feb. 3.......	4840	4.8		.03	.06	19	3.5	21	1.2		42	0	16	40	.1	.3		133	82	28		239	6.7	3		.5
Mar. 4.......	2490	4.1		.17	.05	16	3.0	15	1.0		37	0	14	30	.1	.5		115	53	22		190	6.9	2		1
Apr. 7.......	5460	2.7		.18	.12	11	2.6	11	.9		24	0	12	22	.1	.5		85	38	18		143	6.4	3		.8
May 18.......	2930	2.8		.28	.04	14	2.7	13	1.0		36	0	13	25	.1	.1		101	46	16		169	7.1	5		.1
June 3.......	3230	3.5		.28	.19	11	6.2	19	1.2		37	0	14	37	.1	.3		144	53	22		217	6.5	3		.8
July 14......	280	.8		.04	.04	33	6.2	44	1.7		80	0	19	87	.2	.0		265	108	42		449	7.1	4		.7
CLARION RIVER BASIN																										
3-305. CLARION RIVER NEAR PINEY, PA.																										
Oct. 10, 1964	A25							B16			1		104	28		0.8		213	114	113		354	4.6	4		
Nov. 3.......	A208							B15			3		110	34		.4		233	132	130		377	5.2	10		
Dec. 7.......	A761							B23			8		120	43		.8		277	142	136		428	5.9	20		
Feb. 16, 1965	A3430							B4.1			4		39	5.0		.2		85	42	39		125	5.0	12		
Mar. 23......	A1640							B9.9			4		71	12		.2		126	73	70		211	5.4	5		
Apr. 23......	A2990							B5.5			3		41	6.7		.8		84	43	41		129	5.3	5		
May 25.......	A900							B7.4			6		44	9.0		.5		98	48	43		146	5.9	5		
June 21......	A757							B17			6		81	19		.0		185	80	75		256	5.3	5		
MONONGAHELA RIVER BASIN																										
3-505. TYGART VALLEY RIVER NEAR ELKINS, W. VA.																										
May 20, 1965.	82		0.0	0.18	0.00						40		7.2	1.5			0.01		30	0	0.0	81	7.2	5	7.6	
Sept. 30.....	45		.1	.16	.14						42		8.0	3.0		0.5	.09		39	4	.0	117	7.0	6	8.2	
3-520. MIDDLE FORK AT AUDRA, W. VA.																										
May 20, 1965.	72		0.0	0.00	0.00						14		7.6	0.0			0.06		9	0	0.0	25	7.3	0	7.4	
Sept. 28.....	17		.1	.11	.10						14		8.8	2.0		0.2	.12		11	0	.0	52	6.8	5	6.7	

A Daily mean discharge.
B Calculated Na plus K, reported as Na.

MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen	Turbidity
MONONGAHELA RIVER BASIN--Continued																										
3-535. BUCKHANNON RIVER AT HALL, W. VA.																										
May 20, 1965.	92		1.1	0.05	0.84						0		66	2.0			0.03		52	52		167	4.5	0	7.8	
Sept. 14.....	A26		.1	.08	.11						11		48	8.0		0.9	.20		34	25	0.0	172	6.8	2	8.1	
3-545. TYGART VALLEY RIVER AT PHILIPPI, W. VA.																										
May 20, 1965.	323		0.1	0.10	0.22						2		44	0.2			0.03		40	38	0.2	112	5.1	0	7.9	
Sept. 28.....	181		.0	.08	.48						6		66	7.0		0.7	.06		66	61	.0	198	6.5	2	8.9	
3-570. TYGART VALLEY RIVER AT COLFAX, W. VA.																										
May 21, 1965.	290		0.5	0.05	0.28						1		41	1.1			0.02		33	32	0.3	110	4.7	0	8.7	
Sept. 28.....	544		.1	.10	.62						2		63	5.0			.00		54	52	.1	186	5.5	1	8.4	
3-580. WEST FORK RIVER AT BROWNSVILLE, W. VA.																										
May 21, 1965.	18		0.0	0.06	0.16						25		51	5.2			0.01		74	54		172	6.8	5	4.3	
Sept. 29.....	A1.2		.2	.08	.26						86		80	20			.21		102	32	0.0	387	7.2	7	6.0	
3-610. WEST FORK RIVER AT ENTERPRISE, W. VA.																										
May 21, 1965.	272		6.2	10	3.0						0		755				0.00		560	560	2.4	1420	3.2	0	6.0	
Sept. 28.....	92		6.3	3.0	4.5						0		1040				.00		682	682	1.6	1990	3.6	1	7.2	
3-650. DRY FORK AT HENDRICKS, W. VA.																										
May 20, 1965.	A174		0.0	0.03	0.00						28		6.0	0.5			0.03		26	3		48	7.1	5	7.8	
Sept. 27.....	81		.1	.06	.05						46		9.2	1.0			.00		40	2		97	7.1	4	7.6	
3-700. CHEAT RIVER AT ROWLESBURG, W. VA.																										
May 20, 1965.	482		0.0	0.02	0.00						16		14	1.5			0.06		24	11		58	7.4	5	7.7	
Sept. 30.....	167		.1	.08	.10						16		15	3.0			.24		27	14		74	7.0	7	8.2	

3-780. CASSELMAN RIVER AT GRANTSVILLE, MD.

May 18, 1965.	35	--		0.20	0.00	--	--	--	--		25		26	5.2	--	--	3.1	--	42	22		122	6.2	5		
Aug. 10......	6.6	1.0	0.1			26	7.5	6.1	3.8		41		67	9.8	0.2	0.0	--	154	101	68		249	6.3	6		
Sept. 15.....	16	4.0				18	4.9	2.8	2.1		13		54	5.4	.2	.4	.16	106	55	55		172	6.1	--		

3-825. YOUGHIOGHENY RIVER AT CONNELLSVILLE, PA.

Nov. 4, 1964.	A653							B4.8			16		31	4.4		1.0		75	42	29		116	6.5	10		
Dec. 23......	A920							B4.4			8		33	4.5		2.5		--	40	34		118	6.6	6		
Jan. 6, 1965.	A3660							B3.2			8		29	4.5		4.0		70	39	33		108	6.4	5		
Mar. 17......	A2160							B5.8			4		41	9.0		2.7		--	48	45		148	6.3	5		
May 19.......	A910							B.2			6		32	4.5		1.6		84	46	41		134	6.0	5		
July 28......	A492							B6.4			14		31	4.5		1.6		73	38	27		110	6.7	5		

3-835. YOUGHIOGHENY RIVER AT SUTERSVILLE, PA.

Dec. 7, 1964C	A2320							B7.1			11		55	6.5		3.8		109	63	54		176	6.3	4		
Dec. 7D......								B32			6		189	13		4.5			154	149		497	5.7	5		

3-850. MONONGAHELA RIVER AT BRADDOCK, PA.

Nov. 16, 1964	A2160							B44			4		241	17		7.6		428	188	165		632	5.2	6		
Dec. 21......	A8780							B18			16		114	10		3.6		208	110	97		322	6.4	10		
Jan. 25, 1965	A54300							B12			4		94	8.0		5.0		172	91	88		263	6.0	3		
Apr. 5.......	A21700							B11			4		80	6.3		3.6		157	76	73		223	5.6	10		
May 3........	A9320							B14			7		92	6.2		2.7		161	82	77		249	6.0	3		
June 7.......	A2470							B51			3		275	15		6.3		435	204	202		642	5.2	5		

OHIO RIVER MAIN STEM

3-860. OHIO RIVER AT SEWICKLEY, PA.

Nov. 4, 1964.	A4110							B53			40		215	34		2.6		417	192	159		641	6.9	8		
Dec. 15......	A66500							B11			12		67	15		3.4		145	60	70		237	6.2	5		
Apr. 7, 1965.	A45000							B13			11		85	10		3.6		159	87	78		256	6.2	5		
May 4........	A24700							B18			20		95	16		3.0		--	102	86		309	6.4	5		
May 17.......	A19000							B15			11		81	12		3.4		161	60	71		251	6.2	4		
Sept. 2......	A13500							B62			13		282	38		9.6		--	230	220		764	6.1	5		

A Daily mean discharge.
B Calculated Na plus K, reported as Na.
C Left side and center composited.
D Right side.

MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen	Turbidity
LITTLE KANAWHA RIVER BASIN																										
3-1515. LITTLE KANAWHA RIVER NEAR BURNSVILLE, W. VA.																										
Apr. 19, 1965	930	4.1		0.18	0.00	3.2	1.2	1.4	1.1		8		8.6	2.0	0.0	0.6		30	13	7		39	6.5	23		
June 7.......	14	1.8		.37	.00	4.0	1.5	3.6	1.5		13		7.0	6.2	.1	.0		37	16	6		62	6.6			
Sept. 29.....	8.9	1.5		.30	.06	3.8	1.3	3.4	1.4		11		6.8	5.5	.1	.0		E29	15	6		53	6.5			
3-1519. LYNCH RUN NEAR GLENVILLE, W. VA.																										
May 21, 1965.	0.9		18	5.5	7.3						0		1110	10		--	0.02		608	608	2.5	2070	3.6	3	8.0	
June 9.......		22	--	4.6	9.6	220	5.0	258	4.3		0		1190	1.5	0.9	0.8	--	1930	570	570	2.5	2320	3.4	2	--	
Sept. 29.....			16	1.7	16						0		1530	4.0		.6	.01		916	916	2.0	2540	4.2	3	6.3	
3-1520. LITTLE KANAWHA RIVER AT GLENVILLE, W. VA.																										
Apr. 19, 1965	2680	5.2		0.97	0.21	6.8	2.7	3.3	1.2		20		14	3.0	0.3	0.4		56	28	12		77	6.8	25		
June 8.......	26	4.1		.35	.00	26	7.1	21	2.0		23		95	19	.1	.0		198	94	75		309	6.8			
Sept. 29.....	21	3.0		.31	1.4	26	7.1	52	2.5		61		122	25	.2	.1	0.04	273	94	44		432	7.0			
3-1525. LEADING CREEK NEAR GLENVILLE, W. VA.																										
Apr. 19, 1965		5.5		0.50	0.02	10	2.7	3.4	1.4		24		18	3.7	0.1	0.8	--	71	36	17		97	6.8	55		
May 21.......	24.1	--	0.2	.03	.09	--	--	--	--		45		49	12	--	.5	0.02	--	84	47		230	7.2	5	7.7	
June 8.......		2.5		.31	.00	24	2.7	11	2.2		48		33	18	.1	.1	--	127	71	32		202	7.0	--		
Sept. 29.....		.9		.17	.00	23	7.2	12	3.0		64		28	25	.2	.0	.02	133	87	34		237	7.0	--		
3-1530. STEER CREEK NEAR GRANTSVILLE, W. VA.																										
Apr. 20, 1965	691	6.2		0.47	0.03	5.6	2.2	2.5	0.8		18		13	1.2	0.0	0.3	--	55	23	8		60	7.0	15		
May 21.......	12.0	--	0.0	.10	.03	--	--	--	--		40		13	--	--	.1	0.01	--	40	7		105	7.3	12	7.8	
June 8.......	A5.1	3.4		.22	.00	11	3.0	3.6	2.2		42		11	2.9	.1	.2	--	E59	40	6		102	7.0	--		
Sept. 29.....	2.1	2.7		.28	.01	11	2.8	4.8	2.7		42		11	5.1	.1	.3	.03	73	39	5		110	6.8	--		
3-1535. LITTLE KANAWHA RIVER AT GRANTSVILLE, W. VA.																										
Apr. 20, 1965	5140	5.2		0.85	0.09	7.2	2.4	3.3	1.2		18		14	3.0	0.3	0.2		60	28	13		78	6.7	25		
June 8.......	70	1.7		.14	.00	19	6.5	13	2.1		36		46	18	.1	.0		131	74	45		214	7.0			
Sept. 29.....	39	1.1		.09	.00	25	2.3	18	2.4		35		65	13	.1	.1	0.02	E144	72	44		251	6.9			

3-1540. WEST FORK LITTLE KANAWHA RIVER AT ROCKSDALE, W. VA.

Apr. 20, 1965	950	7.0		0.41	0.03	8.8	1.9	2.8	1.4		25		14	2.6	0.1	0.8		59	30	10		78	6.9	38		
June 8.......	4.5	3.3		.40	.00	14	3.9	5.9	2.1		56		11	7.4	.1	.1		E76	51	5		138	7.0			
Sept. 29.....	4.3	3.4		1.2	.00	20	1.0	8.9	3.0		48		12	18	.1	.1	0.04	98	54	15		170	6.7			

3-1542. SPRING CREEK AT SPENCER, W. VA.

Apr. 20, 1965		6.6		0.20	0.00	8.0	1.9	3.4	1.2		24		14	2.8	0.1	0.4		58	28	9		80	6.9	30		
June 8.......		3.0		.51	.00	30	4.9	20	3.0		96		16	36	.1	.5		171	95	16		298	7.1			
Sept. 29.....		5.6		.94	.60	20	4.4	11	2.9		62		20	18	.1	.0	0.04	118	68	17		203	6.6			

3-1545. REEDY CREEK NEAR REEDY, W. VA.

Apr. 21, 1965	132	6.0		0.56	0.07	10	3.2	5.1	1.2		34		16	4.8	0.2	0.3		75	38	10		106	7.0	20		
June 8.......	1.9	2.8		.35	.00	16	5.6	7.3	2.0		74		9.5	5.5	.2	.4		93	63	3		160	7.2			
Sept. 29.....	1.7	2.3		.36	.40	23	1.6	8.2	3.0		79		8.0	8.0	.2	.1		E94	64	0		171	7.0			

3-1550. LITTLE KANAWHA RIVER AT PALESTINE, W. VA.

Apr. 21, 1965	5820	6.0	--	1.8	0.10	7.6	2.7	2.8	1.2		22		15	3.1	0.1	0.8	--	64	30	12		80	7.0	50		--
May 21.......	315	--	0.0	.04	.04	--	--	--	--		39		23	8.0	--	.1	0.01	--	46	14		148	7.4	8		8.2
June 8.......	A127	1.5	--	.17	.00	20	1.9	11	2.0		40		26	16	.1	.1	--	111	58	25		184	7.1	--		--
Sept. 30.....	55	--	.1	.06	.36	--	--	--	--		66		30	36	--	.5	.28	--	76	22		297	7.4	4		7.6

SOUTH FORK HUGHES RIVER AT SMITHVILLE, W. VA.

Apr. 21, 1965		5.4		0.19	0.00	8.0	2.4	2.9	1.1		24		15	3.0	0.2	0.3		57	30	11		82	7.0	17		
June 9.......		1.5		.22	.14	14	5.1	7.0	2.2		54		18	7.4	.1	.0		E83	56	12		137	6.9	0		
Sept. 30.....		.5		.25	.00	18	4.1	12	3.1		54		10	26	.1	.1	0.04	118	62	18		191	6.9	--		

3-1552. SOUTH FORK HUGHES RIVER AT MacFARLAN, W. VA.

Apr. 21, 1965		5.4		0.26	0.03	8.0	2.4	4.5	1.5		26		15	4.8	0.0	0.2		61	30	9		85	6.9	10		
June 9.......		1.6		.16	.13	15	3.5	7.8	2.2		51		11	13	.1	.0		90	52	10		147	7.2	3		
Sept. 30.....		1.1		.13	.00	24	6.1	43	3.2		56		8.4	89	.1	.1	0.04	227	85	39		404	7.9	--		

A Daily mean discharge.
E Calculated from determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen	Turbidity
																			Calcium, magnesium	Noncarbonate						
LITTLE KANAWHA RIVER BASIN--Continued																										
3-1555. HUGHES RIVER AT CISKO, W. VA.																										
Apr. 21, 1965	858	58		0.37	0.03	9.6	1.9	4.8	0.8		26		16	5.8	0.0	0.2	--	67	32	11		95	6.9	20		
May 21.......	64	.0	0.0	.10	.13	--	--	--	--		47		15	20	--	.1	0.04	--	53	14		175	7.6	5	8.5	
June 9.......	34	3.5		.46	.00	18	3.2	12	2.2		48		14	25	.1	.1	--	115	58	19		188	6.9	--		
Sept. 30.....	12	--		.11	1.2	--	--	--	--		63		15	43	--	.5	.01	--	82	30		279	7.1	6		
LITTLE KANAWHA RIVER AT PARKERSBURG, W. VA.																										
Apr. 22, 1965		6.0		1.6	0.03	8.0	2.9	5.7	1.2		22		22	4.0	0.0	0.4		72	32	14		98	6.8	22		
June 10......		2.8		.73	.36	17	3.8	50	2.4		21		130	17	.1	.1		245	58	41		382	6.5	2		
Sept. 30.....		3.5		3.0	.40	28	6.3	176	3.5		0		448	46	.1	.1	0.01	E717	100	100	0.9	1150	3.6	--		
KANAWHA RIVER BASIN																										
3-1610. SOUTH FORK NEW RIVER NEAR JEFFERSON, N.C.																										
Feb. 12, 1965	617	7.6		0.03		2.6	0.7	1.6	0.9		14		2.0	2.0	0.0	0.3		E25	10	0		29	6.3	5		
June 23......	251	9.3		.01		2.4	1.2	1.4	.6		17		2.0	1.9	.0	.3		E27	11	0		35	6.8	10		
SCIOTO RIVER BASIN																										
3-2283. BIG WALNUT CREEK NEAR SUNBURY, OHIO																										
Feb. 23, 1965														32								587				
Feb. 23......														32								597				
Mar. 11......														22								401				
Apr. 14......														15								372				
May 7........														22								501				
May 25.......														30								596				
June 23......														36								589				
July 28......														44								639				
Aug. 12......														32								548				
Aug. 19......														38								510				

3-2285. BIG WALNUT CREEK AT CENTRAL COLLEGE, OHIO

Feb. 23, 1965	A22													18								365				
Feb. 23......	A22													17								363				
Mar. 11......	A134													18								320				
Apr. 14......	A177													18								332				
May 7........	A31													16								334				
May 25.......	A10													16								341				
June 23......	A2.5													16								348				
July 28......	A1.5													16								342				
Aug. 12......	A7.4													16								361				
Aug. 19......	A12													19								368				

3-2295. BIG WALNUT CREEK AT REESE, OHIO

Feb. 23, 1965	A141													48								704				
Mar. 16......	A317													49								623				
Mar. 22......	A246													53								625				
Apr. 2.......	A508													42								543				
Apr. 12......	A4980													10								257				
May 7........	A172													40								702				
May 24.......	A243													30								546				
July 14......	A33													38								585				
July 30......	A25													40								675				

GREEN RIVER BASIN

3-3106. DOG CREEK NEAR MAMMOTH CAVE, KY. (6.6 MILES NORTH)

Apr. 30, 1965	--			0.17	0.00						46	0	9.6	1.5	0.0	0.2			47	10		99	7.1			
June 28......	2.4			.34	.08						66	0	6.4	1.0	.1	.7			61	7		126	7.7			
Sept. 9......	2.15			.31	.10						68	0	6.0	2.0	.1	.6		72	61	6		128	7.5			

3-3111. BYLEW CREEK NEAR MAMMOTH CAVE, KY. (8.3 MILES NORTHWEST)

Apr. 29, 1965	--			0.15	0.00						38	0	9.2	2.0	0.0	0.1			38	7		100	7.2			
June 28......	1.18			.22	.01						62	0	11	2.0	.1	.6			62	11		133	7.4			
Sept. 8......	.53			.20	.04						64	0	11	1.5	.1	.5		94	62	10		136	7.5			

A Daily mean discharge.
E Calculated from determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen	Turbidity
GREEN RIVER BASIN--Continued																										
3-3116. BEAVER DAM CREEK AT RHODA, KY.																										
Apr. 29, 1965	--			0.15	0.01						61	0	8.4	3.0	0.0	3.2			58	8		129	7.5			
June 29......	2.94			.17	.17						112	0	6.0	3.0	.1	3.9			98	6		202	7.9			
Sept. 8......	.71			.12	.10						128	0	5.6	3.0	.1	2.6		132	106	1		226	8.1			
3-3211. POND RIVER NEAR SACRAMENTO, KY.																										
Feb. 5, 1965.		8.6	0.5	4.5	4.0						3	0	318	20				497	310	307	F0.1	707	5.2	0		85
May 3........		8.5	1.0	.79	.00						0	0	284	12				470	286	286	F.2	637	4.9	2		
CUMBERLAND RIVER BASIN																										
3-4013.7. YELLOW CREEK AT MIDDLESBORO, KY.																										
Feb.24, 1965G											67	0	55	7.0	0.0	4.1		120	86	31		210	7.0	22		20
Apr. 28......	9.0													2.5								243				
3-4014. LITTLE YELLOW CREEK AT MIDDLESBORO, KY.																										
Feb.24, 1965H	8.03										25	0	6.8	4.0	0.0	0.8		44	27	6		72	6.8	15	J11.2	35
Apr. 28......	37.7													2.5								41				
3-4014.07. YELLOW CREEK AT MIDDLESBORO, KY. (DOWNSTREAM FROM SEWAGE DISPOSAL PLANT)																										
Apr. 28, 1965	50													8.5								158				
July 21......	3.91										155	0	176	86					243	116		886	7.6	0		40
BENNETTS FORK NEAR MIDDLESBORO, KY.																										
Feb.24, 1965H											108	0	179	1.5	0.1	2.1		352	244	156		538	7.8	5		20
July 21......	2.53			0.00	0.16						58	0	235	4.0					276	228		572	6.9	3		
3-4085. NEW RIVER AT NEW RIVER, TENN.																										
May 18, 1965.	68.0	5.5	0.1	0.00	0.6	17	8.0	10	1.5		16	0	84	1.3	0.0	0.0	0.00	137	76	62		228	7.0	5		
Sept. 29.....	18.8		.0	.01	.07						16	0	208	2.7		.1	.01		163	150		428	7.1	4		

3-4145. EAST FORK OBEY RIVER NEAR JAMESTOWN, TENN.																										
May 19, 1965.	190	7.5	0.1	0.02	0.8	34	8.1	2.3	0.9		15	0	107	1.7	0.1	1.0	0.00	183	119	107		274	6.8	4		
Sept. 29.....	14		1.0	.20	2.6						4	0	267	3.0		.6	.00		240	237	K0.1	523	5.1	1		
3-4150. WEST FORK OBEY RIVER NEAR ALPINE, TENN.																										
May 19, 1965.	61.0	5.3	0.2	0.00	0.4	35	5.6	1.0	1.0		73	0	52	0.8	0.1	0.5	0.00	146	111	50		235	7.9	7		
Sept. 29.....	14.0		.0	.02	.00						140	0	52	2.0		.2	.01		160	46		311	8.1	2		
3-4180. ROARING RIVER NEAR HILHAM, TENN.																										
Mar. 3, 1965.	132	5.6			0.00	34	4.0	1.6	0.5		121	0	6.8	1.5	0.0	0.5		118	102	2		208	7.5	1		
May 11.......	47.3	5.1			.00	37	4.3	1.4	.7		128	0	5.0	1.5	.0	.9	0.00	116	110	5		218	7.7	4		
3-4185. CANEY FORK AT CLIFTY, TENN.																										
May 20, 1965.	94.4	0.1		0.03	0.3						7	0	18	1.1		4.4	0.00		18	12		53	6.5	3		
Sept. 28.....	18.7	1.6		.70	.8						0	0	52	1.2		.0	.00		45	45	L0.2	144	4.8	2		
3-4200. CALFKILLER RIVER BELOW SPARTA, TENN.																										
Feb. 18, 1965	402	5.2	--	0.02	0.00	29	4.1	1.0	0.3		102	0	8.8	1.3	0.0	0.3	--	108	90	6		181	7.4	1		
May 20.......	155	4.9	0.2	.02	.00	35	4.6	1.6	.8		120	0	11	1.9	.0	1.6	0.00	138	107	8		220	7.9	4		
Sept. 28.....	65.8	--	.1	.34	.03	--	--	--	--		150	0	15	2.8	--	.5	.01	--	134	11		266	7.7	4		
3-4202. COLLINS RIVER NEAR STEPPSVILLE, TENN.																										
May 21, 1965.	66.2		0.1	0.13	0.00						62	0	17	1.3		0.4	0.00		62	10		134	7.7	5		
Sept. 28.....	39.8		.0	.03	.01						52	0	26	1.6		.0	.00		70	28		149	7.4	3		
3-4210. COLLINS RIVER NEAR McMINNVILLE, TENN.																										
Feb. 18, 1965	1280	5.2		0.02	0.00	19	3.4	0.9	0.3		68	0	6.8	0.7	0.0	0.8		68	62	6		125	7.2	1		
Aug. 4.......	234	5.0		.06	.00	9.2	4.7	2.4	.0		38	4	6.6	1.7	.1	.0		55	42	5		102	9.3	6		
Sept. 9......	129	.4		.01	.00	30	7.2	3.2	.0		114	0	15	1.8	.2	.0		116	105	11		217	7.8	0		

F Potential free acidity.
G Includes 0.2 ppm detergent (MBAS).
H Includes 0.0 ppm detergent (MBAS).
J 88 percent saturation.
K Potential free acidity; immediate acidity, 0.1.
L Potential free acidity; immediate acidity, 0.2.

MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$ Calcium, magnesium	Hardness as $CaCO_3$ Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen	Turbidity
CUMBERLAND RIVER BASIN--Continued																										
3-4250. CUMBERLAND RIVER AT CARTHAGE, TENN.																										
May 20, 1965,	16800	3.4	0.2	0.02	0.00	24	3.0	3.4	1.1		66	0	23	2.2	0.0	0.4	0.00	100	72	18		164	7.5	3		
Sept. 29.....	4370		.0	.58	.00						52	0	3.4	2.6		.4	.01		59	16		138	7.5	6		
3-4268. EAST FORK STONES RIVER AT WOODBURY, TENN.																										
Apr. 16, 1965	67.2	5.2			0.00	38	5.7	1.3	0.6		128	0	14	1.4	0.2	0.3	0.00	130	119	14		235	7.4	1		
May 14.......	19.7	4.5			.00	40	6.4	1.5	.6		141	0	11	1.5	.2	1.5		140	127	11		251	7.5	5		
3-4280. WEST FORK STONES RIVER NEAR MURFREESBORO, TENN.																										
Mar. 1, 1965.	113	3.6			0.00	67	5.4	1.5	0.4		216	0	14	2.1	0.1	1.1		203	189	12		362	7.9	7		
Apr. 16......	144	3.8		0.06	.00	59	4.5	1.9	.6		192	0	10	2.5	.1	1.3		182	166	8		318	7.6	7		
May 14.......	17.7	2.0			.00	53	3.9	1.8	1.2		174	0	8.8	2.1	.1	.1	0.00	158	148	6		293	7.9	2		
TENNESSEE RIVER BASIN																										
3-4410. DAVIDSON RIVER NEAR BREVARD, N.C.																										
Dec. 3, 1965.	116	7.6		0.01		1.0	0.4	0.8	0.4		6		0.4	1.0	0.0	0.3		E15	4	0		15	6.4	5		
June 3, 1965.	104	7.0		.04		1.1	.6	1.3	.6		9		2.2	1.2	.1	.4		E18	6	0		18	6.9	15		
3-4485. HOMINY CREEK AT CANDLER, N.C.																										
Dec. 2, 1964.	109	12		0.01		2.9	1.2	2.2	1.0		16		2.4	1.6	0.0	1.0		E32	12	0		36	7.3	5		
June 3, 1965.	105	13		.01		2.9	1.5	2.6	1.3		18		3.4	2.7	.1	1.2		38	13	0		47	7.5	5		
3-4500. BEETREE CREEK NEAR SWANNANOA, N.C.																										
Dec. 4, 1964.	18	7.5		0.01		1.3	0.4	1.0	0.4		7		1.4	0.6	0.0	0.3		E16	4	0		18	6.3	10		
June 1, 1965.	8.9	8.3		.04		1.6	.4	1.3	.5		8		2.4	1.5	.1	.3		E20	6	0		21	6.5	5		
3-4510. SWANNANOA RIVER AT BILTMORE, N.C.																										
Dec. 4, 1964.	225	9.0		0.02		3.4	1.5	3.8	1.4		21		3.4	1.8	0.1	0.2		E35	14	0		51	6.3	15		
June 1, 1965.	159	9.9		.03		3.1	1.3	7.2	2.1		18		4.0	7.0	.0	3.8		E48	13	0		63	6.4	10		

3-4530. IVY RIVER NEAR MARSHALL, N.C.																										
Dec. 9, 1964.	113	13		0.03		4.5	1.4	3.0	1.1		25		2.2	0.4	0.1	0.7		E38	16	0		52	6.6	5		
June 9, 1965.	203	14		.13		4.9	2.1	3.8	2.2		25		5.8	2.5	.0	3.5		E51	21	0		63	6.7	35		
3-4540. BIG LAUREL CREEK NEAR STACKHOUSE, N.C.																										
Dec. 9, 1964.	140	10		0.02		2.9	1.2	2.0	0.7		17		1.0	0.4	0.1	1.1		E27	12	0		36	6.6	10		
June 9, 1965.	214	12		.13		3.5	1.7	2.6	1.4		18		4.6	1.7	.1	1.9		E39	16	1		47	6.8	40		
3-4555. WEST FORK PIGEON RIVER ABOVE LAKE LOGAN, NEAR HAZELWOOD, N.C.																										
Dec. 4, 1964.	178	4.1		0.02		1.3	0.4	0.6	0.4		4		1.8	0.4	0.0	0.6		E12	4	1		16	5.7	20		
June 3, 1965.	67	6.4		.02		1.5	.2	1.1	.6		7		1.6	1.6	.0	.3		E16	5	0		15	6.7	5		
3-4560. WEST FORK PIGEON RIVER BELOW LAKE LOGAN, NEAR WAYNESVILLE, N.C.																										
Dec. 4, 1964.	476	6.4		0.02		1.0	0.3	0.8	0.6		6		0.4	0.4	0.1	0.5		E14	4	0		15	6.2	5		
June 3, 1965.	109	6.5		.02		1.1	.6	1.2	.6		8		2.0	1.5	.0	1.1		E19	6	0		16	6.8	10		
3-4565. EAST FORK PIGEON RIVER NEAR CANTON, N.C.																										
Dec. 4, 1964.	359	6.3		0.01		1.6	0.4	0.8	0.6		7		1.2	0.4	0.0	0.6		E15	6	0		18	6.1	5		
June 7, 1965.	91	6.7		.02		1.4	.5	1.2	.6		11		1.2	1.2	.1	1.0		E19	6	0		20	7.0	10		
3-4575. ALLEN CREEK NEAR HAZELWOOD, N.C.																										
Dec. 3, 1964.	26	8.2		0.00		1.3	0.4	1.1	0.4		8		1.0	0.4	0.0	0.2		E17	4	0		17	6.2	5		
June 7, 1965.	52	7.3		.04		1.1	.7	1.2	.6		9		1.4	1.1	.1	.4		E18	6	0		18	6.9	10		
3-4590. JONATHAN CREEK NEAR COVE CREEK, N.C.																										
Dec. 3, 1964.	116	9.5		0.01		1.9	0.7	1.5	0.7		11		1.6	1.0	0.0	1.1		E23	8	0		24	7.1	5		
June 7, 1965.	107	9.9		.01		1.8	1.3	2.0	1.0		14		2.4	2.1	.1	1.2		E29	10	0		28	6.8	5		
3-4640. CANE RIVER AT SIOUX, N.C.																										
Dec. 9, 1964.	181	10		0.01		2.9	0.8	2.0	0.8		15		1.6	0.6	0.1	0.4		E26	10	0		36	6.1	10		
May 12, 1965.	343	10		.07		2.5	1.4	2.0	1.1		15		4.0	1.3	.1	1.8		E31	12	0		39	6.9	0		

E Calculated from determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen	Turbidity
TENNESSEE RIVER BASIN--Continued																										
3-4790. WATAUGA RIVER NEAR SUGAR GROVE, N.C.																										
Dec. 9, 1964.	113	11		0.02		5.3	1.5	2.3	1.2		22		3.8	2.0	0.1	2.7		E41	19	1		56	6.8	10		
May 11, 1965.	129	13		.02		4.8	1.7	2.5	.7		23		3.4	2.8	.0	1.3		E41	19	0		49	7.5	5		
3-5000. LITTLE TENNESSEE RIVER NEAR PRENTISS, N.C.																										
Dec. 4, 1964.	665	7.7		0.02		1.3	0.6	1.4	0.7		8		1.4	0.4	0.0	0.9		E19	6	0		22	6.0	10		
June 2, 1965.	268	8.8		.16		1.4	.4	2.5	.6		10		3.0	2.0	.1	.9		E25	5	0		27	6.9	0		
3-5002.4. CARTOOGECHAYE CREEK NEAR FRANKLIN, N.C.																										
Dec. 14, 1964	130	10		0.01		2.2	0.7	1.2	0.5		13		0.6	0.6	0.0	0.3		E22	8	0		23	7.2	5		
May 25, 1965.	114	11		.08		1.3	1.7	1.4	.6		14		2.2	1.6	.1	.7		E28	10	0		27	7.3	0		
3-5005. CULLASAJA RIVER AT HIGHLANDS, N.C.																										
Dec. 4, 1964.	126	4.8		0.04		1.1	0.3	0.8	0.4		4		0.8	0.6	0.0	1.1		E12	4	0		16	5.7	15		
June 2, 1965.	28	4.6		.10		1.4	.1	1.1	.4		6		1.0	1.6	.0	.5		E14	4	0		15	6.4	25		
3-5010. CULLASAJA RIVER AT CULLASAJA, N.C.																										
Dec. 4, 1964.	528	6.4		0.03		1.6	0.3	1.0	0.6		7		2.2	0.2	0.0	0.6		E16	5	0		20	5.8	15		
June 2, 1965.	156	8.2		.05		1.4	.3	1.4	.6		11		1.8	1.4	.1	.6		E21	5	0		20	6.9	10		
3-5030. LITTLE TENNESSEE RIVER AT NEEDMORE, N.C.																										
Dec. 2, 1964.	1020	8.2		0.02		1.6	0.4	1.2	0.4		10		0.2	0.4	0.0	0.3		E18	6	0		20	6.3	5		
June 14, 1965	720	9.3		.06		1.8	1.1	2.2	1.2		12		1.6	2.7	.0	1.3		E27	9	0		27	6.4	30		
Sept. 30.....	427	10		.02		2.6	.2	1.5	1.4		12		1.4	2.0	.0	.5		E27	8	0		28	7.2	10		
3-5040. NANTAHALA RIVER NEAR RAINBOW SPRINGS, N.C.																										
Dec. 16, 1964	195	6.6		0.00		1.4	0.4	0.7	0.3		7		1.0	0.6	0.0	0.2		E14	5	0		16	6.2	5		
May 11, 1965.	181	6.2		.02		1.0	.7	.9	.4		9		1.2	.9	.1	.7		E16	6	0		17	6.4	10		
3-5055. NANTAHALA RIVER AT NANTAHALA, N.C.																										
Dec. 16, 1964	658	6.4		0.01		0.6	0.3	0.8	0.6		8		0.4	0.8	0.0	0.3		E14	2	0		14	7.0	5		
May 19, 1965.	665	6.5		.00		1.6	.6	.7	.5		7		1.4	1.2	.1	.2		E16	6	1		15	5.8	5		

3-5066.66. ALARKA CREEK NEAR BRYSON CITY, N.C.																										
July 26, 1965		9.5		0.04		2.1	0.2	1.6	2.3		12		0.8	1.0		0.3		E28	6			22	6.5	4		
Sept. 9......		9.6		.00		2.5	.3	1.8	1.3		14		.4	.5		.2		E25	8			27	6.7	5		
3-5080. TUCKASEGEE RIVER AT TUCKASEGEE, N.C.																										
Dec. 3, 1964.	826	5.6		0.03		0.6	0.4	1.2	0.6		7		0.8	1.0	0.0	0.4		E14	3	0		15	6.2	5		
June 9, 1965.	776	6.4		.01		1.3	.6	1.6	.7		9		2.2	1.1	.0	.4		E18	6	0		19	6.2	5		
3-5090. SCOTT CREEK ABOVE SYLVA, N.C.																										
Dec. 3, 1964.	102	9.6		0.01		1.4	1.0	1.8	0.9		13		0.8	2.3	0.0	0.7		E24	8	0		26	6.5	5		
June 9, 1965.	111	10		.00		2.2	1.1	1.8	.8		14		2.8	2.0	.0	.8		E28	10	0		28	6.7	10		
3-5120. OCONALUFTEE RIVER AT BIRDTOWN, N.C.																										
Dec. 2, 1964.	410	7.0		0.01		1.1	0.5	0.7	0.4		7		1.2	0.4	0.0	0.2		E15	5	0		17	6.4	5		
June 14, 1965	308	7.8		.00		1.2	.7	1.5	.8		9		2.0	1.9	.0	.6		E20	6	0		19	6.7	10		
Sept. 30.....	150	8.7		.00		1.9	.3	1.1	.6		9		1.2	2.0	.0	.1		E20	5	0		18	6.7	5		
3-5135. NOLAND CREEK NEAR BRYSON CITY, N.C.																										
Dec. 1, 1964.	46	5.3		0.02		0.8	0.2	0.6	0.2		5		0.4	0.2	0.0	0.0		E10	3	0		10	6.4	5		
May 17, 1965.	33	6.5		.01		1.6	.1	.6	.4		6		1.4	1.3	.0	.2		E15	4	0		13	5.7	5		
3-5398. OBED RIVER NEAR LANCING, TENN.																										
Oct. 30, 1964	82.7	2.6			0.00	5.7	1.2	1.1	0.8		18	0	7.2	1.1	0.0	0.0		21	19	4		51	7.2	3		
Feb. 2, 1965.	494	3.6			.00	2.1	1.0	.5	.3		8	0	4.4	1.1	.1	.0		21	9	2		26	6.7	2		
May 23.......	420	3.0	0.2	0.00	.00	4.2	.4	.7	.6		13	0	3.8	1.1	.0	.1	0.00	22	12	2		34	7.1	8		
3-5470. HIWASSEE RIVER BELOW CHATAGE DAM, NEAR HAYESVILLE, N.C.																										
Dec. 16, 1964	1340	3.6		0.01		1.0	0.6	1.2	0.9		10		1.4	1.0	0.0	0.4		E15	5	0		20	6.4	5		
May 11, 1965.	15	5.9		.05		1.4	.9	1.3	.7		10		2.8	1.9	.1	.6		E21	7	0		24	6.6	0		

E Calculated from determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphate (PO_4)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen	Turbidity
																			Calcium, magnesium	Noncarbonate						
TENNESSEE RIVER BASIN--Continued																										
3-5485. HIWASSEE RIVER ABOVE MURPHY, N.C.																										
Dec. 15, 1964	1610	5.0		0.02		1.7	0.5	1.3	0.7		10		1.2	1.2	0.1	0.5		E17	6	0		20	6.8	5		
May 10, 1965.	487	9.2		.05		2.3	.4	1.8	.7		11		2.0	1.1	.1	.9		E24	8	0		24	6.5	5		
3-6095. TENNESSEE RIVER AT KENTUCKY DAM, NEAR PADUCAH, KY.																										
Oct. 26, 1964	56000	5.2		0.08	0.00	21	4.3	7.6	0.9		55	0	15	17	0.0	1.1		110	70	25		182	7.4	5		
Jan. 26, 1965	52100	5.5		.18	.00	20	3.2	5.1	.9		57	0	14	9.5	.1	1.3		93	63	16		152	7.5	20		

E Calculated from determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
MIAMI RIVER BASIN																		
3-2760. EAST FORK WHITEWATER RIVER AT BROOKVILLE, IND.																		
Oct. 24, 1964......	0725			26	35	2.4												
Nov. 20............	0720			54	10	1.4												
Jan. 24, 1965......	0845			1030	273	759												
Feb. 19............	1240			368	38	38												
Mar. 12............	1855			565	22	34												
Mar. 24............	1535			990	122	326												
Apr. 16............	0915			1230	122	405												
May 21.............	0800			188	28	14												
July 16............	1435			75	49	9.9												
Aug. 17............	1025			28	35	2.6												
Sept. 25...........	0945			65	38	6.7												
ANDERSON RIVER BASIN																		
3-3033. MIDDLE FORK ANDERSON RIVER AT BRISTOW, IND.																		
Feb. 18, 1965......	1400			31	12	1.0												
Mar. 19............	1030			62	12	2.0												
July 15............	1045			3	7	.1												
WABASH RIVER BASIN																		
3-3243. SALAMONIE RIVER NEAR WARREN, IND.																		
Feb. 12, 1935......	1355			3270	310	2740												
Sept. 13...........	1230			10	54	1.4												
3-3355. WABASH RIVER AT LAFAYETTE, IND.																		
Feb. 11, 1965......	1130			30800	980	81500												
Feb. 16............	0935			9720	173	4540												
Mar. 18............	1000			14400	126	4900												

MISCELLANEOUS ANALYSES OF STREAMS IN OHIO RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
WABASH RIVER BASIN--Continued																		
3-3515. FALL CREEK NEAR FORTVILLE, IND.																		
Mar. 12, 1965......	1425			241	14	9.1												
Mar. 24...........	1540			371	37	37												
3-3540. WHITE RIVER NEAR CENTERTON, IND.																		
Mar. 24, 1965......	1355			3180	84	721												
Apr. 1............	1325			2260	28	171												
May 3.............	1035			2570	78	541												
3-3680. BRUSH CREEK NEAR NEBRASKA, IND.																		
Jan. 23, 1965......	1300			63	136	23												
Feb. 9............	1355			660	2690	4790												
Feb. 19...........	1000			4.7	17	.2												
Mar. 19...........	1650			4.4	4	T												
Apr. 15...........	1700			65	74	13												
May 20............	1800			.8	4	.1												
Aug. 12...........	0745			.1	38	.1												
Sept. 24..........	1300			1.6	26	.1												
3-3765. PATOKA RIVER NEAR PRINCETON, IND.																		
Oct. 1, 1964.......	1430			14	2	0.1												
Oct. 22...........	1155			3.6	2	T												
Nov. 19...........	1210			45	9	1.1												
Jan. 22, 1965......	1445			278	62	46												
Feb. 18...........	1120			3740	79	798												
Mar. 19...........	0710			1850	56	280												
Apr. 15...........	0800			950	237	608												
May 20............	1025			75	17	3.4												
June 17...........	0800			96	13	3.4												
July 15...........	0605			174	23	11												
Aug. 11...........	1515			14	16	.6												
Sept. 23..........	1400			298	138	111												

PART 4. ST. LAWRENCE RIVER BASIN

STREAMS TRIBUTARY TO LAKE SUPERIOR

4-10. WASHINGTON CREEK AT WINDIGO, MICH.

LOCATION.--Temperature recorder at gaging station on left bank, 0.8 mile northeast of Windigo, Keweenaw County, and 35 miles southwest of Rock Harbor, Isle Royale National Park.
DRAINAGE AREA.--13.2 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 65°F July 23-25, Aug. 14; minimum, freezing point on many days during winter months.
REMARKS.--Intermittent periods of ice effect in winter months.

Chemical analyses in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color
Feb. 11, 1965........	1.04							100	6.8	5.0	0.0	0.7	120	91	9	193	7.3	--
May 12,..............	46.0							64	10	1.0	.3	1.2	A112	62	10	128	6.3	110
July 21..............	2.88							92	5.2	2.0	.3	1.1	B132	86	10	165	7.6	75
Sept. 22.............	13.4							64	5.0	1.0	.4	.6	C116	64	12	117	7.3	100

A Loss on ignition 73 parts per million.
B Loss on ignition 34 parts per million.
C Loss on ignition 42 parts per million.

STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

4-10. WASHINGTON CREEK AT WINDIGO, MICH.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	39	39	40	39	40	39	39	40	39	38	38	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	38	39	39	39	38	39	39	39	38	38	38	--
November																																
Maximum	39	40	41	42	42	42	40	38	38	38	39	39	39	39	38	38	37	37	35	35	36	35	35	35	35	35	35	35	35	35	--	38
Minimum	38	39	40	41	42	40	38	37	38	38	38	38	39	38	38	37	37	35	35	35	35	35	35	35	35	35	35	35	35	35	--	37
December																																
Maximum	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	34
Minimum	35	35	35	35	35	35	35	35	35	35	35	34	34	35	34	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	34
January																																
Maximum	33	33	33	33	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	33	33	33	33	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
February																																
Maximum	--	--	--	--	--	--	--	--	--	--	32	32	33	33	32	33	32	32	33	33	33	33	33	33	33	33	32	32	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	32	32	32	32	32	32	32	32	32	32	32	33	33	33	33	33	32	32	--	--	--	--
March																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
April																																
Maximum	32	32	32	32	32	33	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	34	35	35	35	35	35	37	37	37	--	34
Minimum	32	32	32	32	32	33	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	34	35	35	35	35	35	35	35	35	--	34
May																																
Maximum	37	--	--	--	--	--	--	--	--	--	--	--	47	47	47	45	46	48	49	49	48	50	50	50	57	57	54	51	50	53	54	--
Minimum	35	--	--	--	--	--	--	--	--	--	--	--	44	46	45	44	43	46	46	45	47	47	48	49	50	54	51	47	45	48	49	--
June																																
Maximum	54	54	52	54	54	56	58	59	57	53	56	56	56	56	56	57	59	59	59	59	59	59	60	60	60	61	61	59	59	57	--	57
Minimum	51	50	50	50	52	53	53	55	52	51	50	52	50	50	50	52	53	53	54	57	55	55	56	55	55	58	59	56	57	54	--	53
July																																
Maximum	57	56	59	59	58	57	58	58	59	59	58	58	60	60	59	58	60	61	61	59	58	62	65	65	65	63	62	61	61	59	57	60
Minimum	54	55	56	58	55	53	55	55	55	55	54	56	58	59	56	57	57	59	56	56	54	56	61	62	60	58	58	58	57	57	56	57
August																																
Maximum	58	58	58	58	60	60	60	58	60	60	60	63	63	65	64	62	62	62	60	59	57	58	58	58	58	58	58	55	53	51	53	59
Minimum	55	54	55	55	58	60	58	55	56	55	57	60	61	62	62	60	60	60	58	57	57	55	55	56	58	57	55	53	51	51	51	57
September																																
Maximum	53	53	56	56	56	55	52	52	52	52	52	50	51	51	50	49	48	50	50	49	50	--	--	--	--	--	--	--	--	--	--	--
Minimum	52	52	53	55	55	52	51	51	51	52	49	49	50	50	49	47	47	48	50	49	49	--	--	--	--	--	--	--	--	--	--	--

STREAMS TRIBUTARY TO LAKE SUPERIOR

4-160. PARTRIDGE RIVER NEAR AURORA, MINN.

LOCATION.--At gaging station at highway bridge, 1,000 feet downstream from Second Creek, 2.5 miles east of Aurora, St. Louis County, and 2.8 miles upstream from mouth.
DRAINAGE AREA.--156 square miles.
RECORDS AVAILABLE.--Chemical analyses: April 1956 to September 1959, July 1960 to September 1965.
Water temperatures: April 1956 to September 1959, July 1960 to September 1963.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 6, 1964.	134	11	0.0	0.72	0.07	17	12	12	2.9	53	0	55	8.8	0.4	4.8	0.25	191	90	47	0.5	236	7.1	200
Oct. 23......	71.1	11	.2	.47	.08	22	17	20	4.8	87	0	68	13	.5	5.8	.25	242	123	52	.8	342	7.1	100
Dec. 7.......	17.5	13	1.0	.84	.19	21	17	18	4.6	96	0	54	16	.6	2.8	.07	211	121	42	.7	315	7.2	90
Jan. 18, 1965	15.0	14	.7	.51	.17	23	15	18	3.4	109	0	45	16	.6	3.4	.07	204	121	32	.7	326	7.0	110
Feb. 18......	20.1	12	.5	.24	.12	26	17	28	5.4	134	0	48	25	.7	3.0	.09	246	136	26	1.0	417	7.3	40
Apr. 4.......	17.3	13	.4	.37	.20	26	14	17	4.2	110	0	44	18	.5	2.1	.11	217	123	33	.7	327	7.6	50
Apr. 30......	538	6.5	.7	.35	.06	6.7	25	2.3	1.5	14	0	14	3.8	.2	3.4	.03	85	27	16	.1	75	6.3	95
June 17......	154	5.1	--	.35	.09	11	6.7	5.6	1.8	37	0	24	5.0	.2	2.2	.05	127	55	25	.3	134	6.5	110
July 20......	54.1	5.5	.6	.35	.12	19	12	10	2.9	71	0	45	7.2	.2	2.9	.06	169	97	39	.4	243	7.3	120
Sept. 13.....	356	11	.4	.28	.19	26	20	22	6.0	126	0	67	16	.4	3.2	.07	243	146	43	.8	398	7.9	40

STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

4-165. ST. LOUIS RIVER NEAR AURORA, MINN.

LOCATION.--At gaging station at highway bridge, 0.8 mile downstream from Partridge River and 1.5 miles south of Aurora, St. Louis County.
DRAINAGE AREA.--312 square miles.
RECORDS AVAILABLE.--Chemical analyses: April 1956 to September 1959, July 1960 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 6, 1964.	292	7.8	0.1	0.67	0.07	9.2	6.1	4.7	1.1	34	0	20	3.6	0.3	0.9	0.10	132	48	20	0.3	111	6.4	200
Oct. 22......	165	7.7	.1	.62	.14	12	8.5	8.1	2.3	49	0	28	6.6	.3	1.5	.12	152	65	25	.4	164	6.6	125
Dec. 4.......	59.1	13	.9	.61	.13	18	11	11	3.3	79	0	33	9.4	.4	2.5	.02	179	92	27	.5	227	7.1	90
Jan. 7, 1965.	52.4	12	.8	.61	.12	20	6.1	6.9	1.7	73	0	19	5.6	.3	2.3	.07	148	75	15	.3	181	6.8	90
Feb. 26......	33.2	14	.6	.71	.09	16	7.1	4.6	1.7	74	0	11	4.0	.3	1.3	.02	138	69	8	.2	146	7.2	130
Apr. 30......	898	6.0	.8	.41	.05	5.0	3.8	1.9	1.1	19	0	12	2.0	.2	2.1	.07	84	28	12	.2	68	6.5	135
June 17......	355	3.9	--	.38	.05	5.2	6.1	3.0	1.0	27	0	16	3.0	.2	.8	.04	101	38	16	.2	85	6.5	140
July 21......	135	5.5	.8	.39	.09	12	7.1	4.8	1.4	50	0	24	3.6	.3	1.0	.07	107	59	18	.3	139	7.2	120
Sept. 13.....	73.4	11	.6	.31	.16	19	13	13	3.7	93	0	40	8.7	.4	2.9	.02	167	100	24	.6	267	7.7	39

STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

4-240. ST. LOUIS RIVER AT SCANLON, MINN.

LOCATION.--At gaging station at bridge on U.S. Highway 61 at Scanlon, Carlton County, 0.6 mile downstream from Minnesota Power and Light Co. powerplant, 3 miles upstream from Thomson Reservoir, and 3.2 miles upstream from Midway River.
DRAINAGE AREA.--3,430 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: July 1958 to September 1959, July 1960 to September 1965.
REMARKS.--Some spectrographic data available in district office at St. Paul, Minn.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 28, 1964	1360	7.1	0.1	0.54	0.08	22	6.8	6.8	1.5	70	0	19	12	0.2	0.2	0.26	170	83	26	0.3	191	6.7	120
Oct. 30......	1260	7.3	.7	.52	.08	24	4.4	6.4	1.4	75	0	18	12	.4	1.0	.20	177	78	16	.3	185	6.5	170
Nov. 25......	1190	10	.9	.40	.08	26	9.0	7.0	1.5	81	0	23	14	.3	1.7	.05	192	102	36	.3	226	7.0	90
Jan. 17, 1965	1560	9.7	.9	.50	.08	26	4.2	11	1.2	64	0	20	20	.3	.6	.13	181	82	29	.5	212	6.7	100
Feb. 26......	1360	10	.8	.68	.06	32	5.6	6.7	1.1	94	0	21	12	.4	1.6	.04	197	103	26	.3	228	7.4	150
Apr. 9.......	855	9.9	.7	.73	.14	35	7.9	15	1.9	104	0	27	24	.3	1.6	.07	238	120	35	.6	302	7.1	160
May 28.......	5560	5.4	--	.38	.09	14	5.4	3.3	1.0	46	0	14	5.8	.4	.4	.06	129	57	18	.2	117	6.7	140
June 11......	7590	5.6	--	.39	.07	13	4.8	4.2	.8	47	0	12	4.0	.2	.7	.06	127	52	13	.3	108	6.6	160
July 14......	1380	17	.3	.29	.17	48	16	8.1	1.0	170	0	28	22	.2	6.8	.02	257	187	48	.3	396	7.8	20
Aug. 26......	670	6.3	.8	.40	.11	28	6.4	9.0	1.4	73	0	22	19	.4	1.3	.15	170	96	36	.4	228	7.2	110
Sept. 30.....	2110	9.7	1.3	.58	.14	18	6.6	5.5	1.8	55	0	24	11	.3	1.7	.04	155	72	27	.3	166	7.4	130

STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

4-310. BLACK RIVER NEAR BESSEMER, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 450 feet downstream from bridge on county highway, 500 feet downstream from Powder Mill Creek, and 2.5 miles north of Bessemer, Gogebic County.
DRAINAGE AREA.--200 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1954 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 82°F July 23, Aug. 14; minimum, freesing point on many days during winter months.
EXTREMES, 1954-65.--Water temperatures: Maximum, 84°F July 23, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Complete ice cover during winter months.

Temperatnre (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	50	51	50	48	46	43	42	42	40	39	39	43	47	49	51	52	52	50	45	42	40	40	40	41	45	48	48	48	44	42	43	45
Minimum	46	50	48	46	43	42	41	40	39	37	39	39	43	46	48	50	50	46	42	40	40	40	39	38	41	45	48	44	42	40	42	43
November																																
Maximum	44	47	50	50	49	45	43	43	44	44	46	46	45	42	42	42	39	36	34	33	32	32	32	32	32	32	32	32	32	32	--	39
Minimum	42	44	47	49	45	43	41	41	43	44	44	45	42	41	41	39	36	34	33	32	32	32	32	32	32	32	32	32	32	32	--	38
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	33	33	33	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
April																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	34	35	36	36	36	37	36	36	35	34	37	36	38	42	42	--	34
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	33	34	34	34	35	34	34	32	33	32	34	32	35	38	--	33
May																																
Maximum	44	47	49	50	49	53	52	52	52	51	54	55	57	56	54	53	51	55	54	53	56	55	55	60	65	65	60	51	53	50	55	54
Minimum	40	42	46	45	46	49	50	51	49	49	47	51	50	53	53	46	44	50	50	49	52	51	54	53	59	60	51	46	44	50	53	49
June																																
Maximum	54	57	56	56	56	61	63	64	62	61	65	67	65	64	65	64	67	69	69	68	70	66	70	72	72	69	75	75	68	69	--	65
Minimum	53	52	54	52	55	55	59	60	58	55	57	61	58	56	56	58	57	58	61	62	60	62	60	60	60	62	61	65	61	56	--	58
July																																
Maximum	65	68	72	74	71	64	71	64	68	68	68	71	73	73	73	77	76	73	77	72	75	80	82	79	79	77	76	77	76	73	66	73
Minimum	58	60	60	62	62	59	59	61	60	59	60	62	66	65	64	66	66	66	60	62	64	69	70	69	66	63	63	64	61	64	61	63
August																																
Maximum	69	72	76	76	78	75	70	64	68	69	75	79	80	82	79	72	74	72	72	70	72	68	69	70	65	63	63	57	54	53	57	70
Minimum	60	58	61	61	64	69	64	62	59	60	63	68	69	71	67	65	64	62	58	56	59	57	56	60	61	60	57	53	52	52	52	61
September																																
Maximum	57	61	66	67	64	59	57	60	63	63	63	59	57	53	52	50	50	52	52	50	50	52	52	50	48	46	45	44	46	51	--	55
Minimum	55	54	58	60	56	55	52	48	56	52	49	53	53	50	50	48	49	50	51	50	49	50	50	48	46	44	43	43	44	46	--	50

STREAMS TRIBUTARY TO LAKE MICHIGAN

4-460. BLACK RIVER NEAR GARNET, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 10 feet upstream from highway bridge, 15 feet downstream from unnamed tributary entering from right, 3.5 miles upstream from Lake Michigan, and 4 miles southwest of Garnet, Mackinac County.
DRAINAGE AREA.--28 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1951 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 62°F June 28, minimum, freezing point on many days during January to March.
EXTREMES, 1951-65.--Water temperatures: Maximum, 68°F July 21, 22, 1952; minimum, freezing point on many days during winter months.
REMARKS.--River does not freeze over.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	49	50	50	48	47	46	44	44	45	44	43	45	47	49	49	49	49	49	48	45	44	44	44	44	45	47	48	49	48	45	44	47
Minimum	47	49	48	47	46	44	43	43	44	43	43	43	45	47	48	48	48	48	45	44	44	43	43	44	44	45	47	48	45	44	44	45
November																																
Maximum	45	45	47	48	48	45	44	44	45	45	46	45	45	43	43	43	43	41	40	47	36	36	36	37	37	37	37	36	36	35	--	41
Minimum	44	45	45	47	45	43	43	43	44	45	45	45	43	42	42	43	41	40	37	36	36	36	36	36	37	36	36	36	35	34	--	40
December																																
Maximum	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	33	33	33	33	33	33	33	33	33
Minimum	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
January																																
Maximum	33	33	33	33	32	32	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	33	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	33	34	34	34	34	34	34	33	34	33	32	32	32	34	33	34	34	34	33	33	33	33	34	34	33	35	33	35	35	35	36	33
Minimum	32	32	33	34	34	33	32	32	32	32	32	32	32	32	32	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32
April																																
Maximum	36	37	36	37	37	36	35	36	35	35	35	34	35	34	33	34	35	34	35	35	35	36	36	36	36	38	38	41	43	48	--	36
Minimum	34	33	33	34	35	35	34	34	35	34	34	34	33	33	33	33	33	33	33	33	34	34	36	34	36	38	41	39	41	45	--	35
May																																
Maximum	48	49	49	48	49	52	54	58	58	58	58	58	56	56	56	56	56	56	57	56	55	56	56	58	58	60	60	56	52	52	53	55
Minimum	46	47	48	45	46	49	52	54	57	57	57	56	52	53	56	54	52	55	54	52	54	53	53	54	56	56	56	53	50	51	49	52
June																																
Maximum	53	56	56	58	57	61	61	61	58	56	57	57	57	57	56	53	58	60	60	59	61	59	58	58	58	58	60	62	61	57	--	58
Minimum	53	52	52	54	56	56	59	58	55	54	53	55	54	52	53	53	56	55	55	57	55	57	55	55	53	54	55	59	55	53	--	55
July																																
Maximum	57	59	57	59	58	55	56	56	57	56	56	58	60	61	59	57	59	57	56	56	54	55	59	59	58	57	55	54	54	54	54	57
Minimum	52	55	55	53	55	51	54	53	55	53	52	53	57	57	55	56	55	54	52	51	52	53	54	55	53	53	52	53	52	50	53	53
August																																
Maximum	54	54	53	55	55	54	55	55	57	56	56	55	57	60	59	56	56	55	53	54	52	55	55	55	55	55	56	53	51	50	49	54
Minimum	53	52	51	50	52	53	54	54	54	54	51	54	54	55	55	53	54	54	51	50	51	52	50	52	50	53	53	50	48	48	48	52
September																																
Maximum	51	52	54	55	57	54	51	52	51	53	50	51	53	53	52	51	50	52	54	54	54	54	54	54	51	48	46	46	47	50	--	51
Minimum	49	48	50	51	54	51	51	49	50	50	48	48	50	51	51	49	50	50	52	54	54	54	54	51	48	46	44	44	46	47	--	50

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-579. BLACK RIVER NEAR REPUBLIC, MICH.

LOCATION.--At gaging station at bridge on County Highway 478, 2.2 miles downstream from Bruce Creek, and 4.4 miles east of Republic, Marquette County.
DRAINAGE AREA.--34.4 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1961 to September 1965.
Sediment records: April 1962 to September 1963, October 1963 to September 1964 (periodic), October 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 75°F Aug. 14; minimum, freezing point on many days during winter months.
Sediment concentrations: Maximum daily, 27 ppm Apr. 20; minimum daily, 1 ppm Apr. 2-4, Aug. 29, Sept. 13.
Sediment loads: Maximum daily, 16 tons Apr. 20; minimum daily, less than 0.05 ton on many days during April, June to September.
EXTREMES, 1961-65.--Water temperatures: Maximum, 81°F July 1, 1963; minimum, freezing point on many days during winter months.
Sediment concentrations (1963-63, 1964-65): Maximum daily, 27 ppm Apr. 20, 1965; minimum daily, 1 ppm on many days during 1962-63, 1965.
Sediment loads (1962-63, 1964-65): Maximum daily, 16 tons Apr. 20, 1965; minimum daily, lese than 0.05 ton on many days during 1962-63, 1965.
REMARKS.--Complete ice cover during winter months. Temperature recorder located at gaging station, 5 feet downstream from bridge. Flow affected by ice Nov 20, Dec. 19-31, Jan. 1-25, Feb. 11-28, Mar. 1-16, 18-30.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganess (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Sept. 20, 1965.	40.7									24	13	2.5		3.9		36	16		83	7.1	

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-579. BLACK RIVER NEAR REPUBLIC, MICH.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	47	49	49	47	45	42	40	41	40	38	38	42	44	46	48	48	48	48	45	42	40	40	40	38	40	44	44	44	43	41	40	43
Minimum	45	45	47	45	42	40	39	40	38	37	37	38	43	44	46	46	48	45	42	41	40	40	38	37	38	40	44	43	41	39	39	42
November																																
Maximum	40	42	44	45	45	42	40	37	39	40	42	42	42	41	41	41	40	36	34	34	34	34	34	33	33	32	32	32	32	32	--	38
Minimum	40	40	42	44	42	40	36	36	37	39	40	41	41	40	40	40	36	34	34	34	34	34	33	33	32	32	32	32	32	32	--	37
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
April																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	35	35	36	36	40	40	40	48	48	--	34
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	34	33	34	35	37	33	37	44	--	33
May																																
Maximum	48	51	51	51	51	51	56	56	56	54	58	58	58	57	55	55	56	58	58	58	56	57	57	60	65	65	64	59	53	53	54	56
Minimum	44	46	49	46	46	48	51	54	54	53	52	54	52	54	55	52	50	54	53	52	54	53	54	55	60	63	59	52	48	52	50	52
June																																
Maximum	54	56	56	57	57	58	61	62	62	57	60	62	60	--	--	--	65	68	69	70	69	68	66	67	67	66	72	73	72	66	--	64
Minimum	53	52	52	52	56	56	58	60	57	53	54	58	56	--	--	--	57	58	60	65	62	64	62	60	60	60	62	67	64	57	--	58
July																																
Maximum	65	66	69	68	66	64	68	67	66	65	65	68	72	72	69	68	70	69	67	66	66	72	74	74	70	68	67	66	66	64	60	68
Minimum	59	62	63	63	60	58	61	61	62	59	59	60	66	66	62	64	65	65	61	61	62	64	70	70	65	64	62	64	60	60	60	63
August																																
Maximum	60	62	62	66	68	68	66	66	65	64	68	71	70	75	73	70	68	68	65	62	62	63	62	63	63	63	63	59	56	54	56	65
Minimum	58	55	58	60	62	66	65	64	62	60	60	67	66	69	68	65	64	65	60	58	59	60	58	60	60	61	59	55	52	53	53	61
September																																
Maximum	56	57	58	61	62	60	56	56	58	58	56	54	54	54	54	52	52	54	54	54	52	52	51	50	48	46	44	43	45	48	--	53
Minimum	54	52	57	58	60	56	56	52	55	56	51	52	54	52	52	50	50	52	54	52	51	51	50	48	46	44	42	42	43	45	--	51

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-579. BLACK RIVER NEAR REPUBLIC, MICH.--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	32	2	0.2	15	3	0.1	19	5	0.2
2..	31	2	.2	16	2	.1	19	4	.2
3..	27	2	.1	16	2	.1	18	5	.2
4..	31	2	.2	20	3	.2	16	6	.2
5..	28	3	.2	30	3	.2	15	6	.2
6..	27	2	.1	27	5	.4	15	6	.2
7..	24	2	.1	24	3	.2	15	2	.1
8..	28	3	.2	28	3	.2	14	2	.1
9..	30	2	.2	26	3	.2	14	3	.1
10..	30	2	.2	21	7	.4	14	4	.2
11..	28	3	.2	29	8	.6	16	3	.1
12..	26	2	.1	47	9	1.1	16	3	.1
13..	26	2	.1	62	10	1.7	15	3	.1
14..	22	3	.2	55	9	1.3	14	3	.1
15..	19	2	.1	46	10	1.2	14	4	.2
16..	17	2	.1	50	12	1.6	14	4	.2
17..	16	2	.1	42	10	1.1	14	3	.1
18..	16	3	.1	36	9	.9	14	2	.1
19..	16	3	.1	34	11	1.0	14	2	.1
20..	17	3	.1	30	10	.8	14	3	.1
21..	17	2	.1	22	10	.6	14	3	.1
22..	22	3	.2	19	9	.5	14	3	.1
23..	26	2	.1	18	7	.3	14	3	.1
24..	24	2	.1	17	6	.3	14	7	.3
25..	22	2	.1	17	5	.2	14	8	.3
26..	21	2	.1	17	4	.2	15	8	.3
27..	19	2	.1	16	3	.1	15	8	.3
28..	18	2	.1	17	4	.2	15	8	.3
29..	17	2	.1	19	5	.2	15	8	.3
30..	17	4	.2	19	3	.2	15	9	.4
31..	16	3	.1	--	--	--	15	10	.4
Total	710	--	4.2	835	--	16.2	464	--	5.8

Day	JANUARY			FEBRUARY			MARCH		
1..	15	11	0.4	9.2	8	0.2	9.8	5	0.1
2..	15	13	.5	8.8	9	.2	10	4	.1
3..	15	13	.5	8.8	8	.2	10	4	.1
4..	15	12	.5	8.4	7	.2	11	4	.1
5..	14	11	.4	8.0	8	.2	11	4	.1
6..	14	10	.4	8.0	7	.2	11	4	.1
7..	13	10	.4	8.4	6	.1	11	3	.1
8..	13	10	.4	8.8	5	.1	11	3	.1
9..	13	11	.4	8.9	5	.1	11	4	.1
10..	13	13	.4	8.4	4	.1	11	4	.1
11..	13	15	.5	9.0	3	.1	11	5	.1
12..	12	9	.3	9.4	3	.1	11	6	.2
13..	12	8	.2	9.6	4	.1	11	6	.2
14..	11	7	.2	10	4	.1	11	4	.1
15..	11	6	.2	10	5	.1	11	3	.1
16..	11	8	.2	10	6	.2	11	4	.1
17..	11	8	.2	10	6	.2	11	3	.1
18..	11	7	.2	10	4	.1	12	3	.1
19..	11	5	.1	10	6	.2	12	4	.1
20..	11	5	.1	10	5	.1	12	4	.1
21..	11	5	.1	10	4	.1	13	3	.1
22..	11	8	.2	9.8	4	.1	13	4	.1
23..	11	10	.3	9.6	3	.1	13	3	.1
24..	11	10	.3	9.6	4	.1	12	4	.1
25..	11	11	.3	9.6	3	.1	12	3	.1
26..	11	7	.2	9.6	4	.1	12	5	.2
27..	10	6	.2	9.6	4	.1	12	5	.2
28..	10	9	.2	9.6	5	.1	12	5	.2
29..	10	11	.3	--	--	--	12	6	.2
30..	10	14	.4	--	--	--	12	5	.2
31..	10	10	.3	--	--	--	13	4	.1
Total	370	--	9.3	260.6	--	3.7	355.8	--	3.8

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-579. BLACK RIVER NEAR REPUBLIC, MICH.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	14	2	0.1	227	8	4.9	46	8	1.0
2..	16	1	T	218	9	5.3	52	9	1.3
3..	17	1	T	208	10	5.6	42	7	.8
4..	19	1	.1	188	6	3.0	34	6	.6
5..	30	2	.2	161	7	3.0	30	6	.5
6..	38	2	.2	149	7	2.8	32	6	.5
7..	45	2	.2	154	6	2.5	42	7	.8
8..	57	3	.5	226	9	5.5	42	6	.7
9..	76	3	.6	287	10	7.7	42	4	.4
10..	68	3	.6	260	8	5.6	38	4	.4
11..	74	5	1.0	226	9	5.5	34	4	.4
12..	78	7	1.5	184	8	4.0	29	5	.4
13..	88	12	2.8	147	8	3.2	24	3	.2
14..	105	16	4.5	119	9	2.9	21	4	.2
15..	132	14	5.0	106	7	2.0	19	4	.2
16..	131	14	5.0	174	4	1.9	17	3	.1
17..	147	22	8.4	226	4	2.4	16	2	.1
18..	173	19	8.9	188	4	2.0	14	2	.1
19..	196	22	12	152	7	2.9	12	3	.1
20..	218	27	16	121	8	2.6	12	3	.1
21..	230	21	13	100	7	1.9	10	3	.1
22..	238	10	6.4	90	8	1.9	12	3	.1
23..	278	8	6.0	78	8	1.7	16	2	.1
24..	257	12	8.3	69	8	1.5	13	2	.1
25..	244	11	7.2	61	8	1.3	10	2	.1
26..	228	12	7.4	56	9	1.4	9.2	3	.1
27..	232	10	6.3	54	9	1.3	8.4	2	T
28..	210	9	5.1	47	9	1.1	12	3	.1
29..	202	11	6.0	42	8	.9	12	2	.1
30..	215	10	5.8	38	7	.7	9.6	3	.1
31..	—	--	—	42	8	.9	—	—	--
Total	4051	--	139.2	4398	--	89.9	710.2	--	9.8

Day	JULY			AUGUST			SEPTEMBER		
1..	7.6	4	0.1	10	6	0.2	6.2	3	T
2..	6.8	2	T	7.2	6	.1	4.7	2	T
3..	6.5	2	T	5.6	8	.1	4.1	2	T
4..	6.8	2	T	6.5	8	.1	4.4	2	T
5..	17	2	.1	6.5	8	.1	4.4	2	T
6..	14	2	.1	5.6	5	.1	3.5	6	0.1
7..	10	2	.1	5.3	5	.1	3.8	4	T
8..	8.8	2	T	5.6	4	.1	4.1	2	T
9..	8.8	2	T	4.1	3	T	4.4	2	T
10..	8.0	3	.1	3.1	4	T	8.4	3	.1
11..	6.5	2	T	2.3	4	T	6.2	2	T
12..	5.9	3	T	2.3	3	T	5.3	2	T
13..	5.6	3	T	3.3	4	T	5.3	1	T
14..	6.2	2	T	2.7	3	T	7.6	3	.1
15..	5.9	5	.1	2.0	2	T	15	3	.1
16..	5.3	4	.1	1.6	2	T	14	3	.1
17..	4.7	3	T	1.6	3	T	16	4	.2
18..	4.4	3	T	1.8	4	T	20	5	.3
19..	4.1	4	T	3.1	3	T	24	7	.4
20..	3.5	5	T	2.3	3	T	42	--	.7
21..	3.8	4	T	1.6	3	T	56	--	.6
22..	4.1	4	T	2.9	4	T	65	--	.5
23..	4.4	6	.1	3.1	4	T	47	--	.4
24..	4.1	4	T	2.3	3	T	38	--	.3
25..	3.5	4	T	2.3	5	T	30	--	.2
26..	3.1	4	T	2.5	3	T	26	--	.2
27..	2.7	3	T	3.1	3	T	22	--	.2
28..	2.7	3	T	3.5	2	T	24	--	.2
29..	2.7	3	T	3.3	1	T	32	--	.2
30..	3.8	3	T	3.8	2	T	34	--	.3
31..	7.2	6	.1	6.5	3	.1	—	--	--
Total	188.5	--	1.7	117.4	--	1.5	577.4	--	5.5

Total discharge for year (cfs-days)..........13,037.9
Total load for year (tons)..........290.6

T Less than 0.05 ton.

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-580. MIDDLE BRANCH ESCANABA RIVER NEAR ISHPEMING, MICH

LOCATION.--Temperature recorder at gaging station on left bank, 0.5 mile downstream from County Highway 581, 6 miles southwest of Ishpeming, Marquette County, and 10 miles east of Republic.
DRAINAGE AREA.--128 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1961 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 72°F July 23, 24; minimum, freezing point on many days during November to April.
EXTREMES, 1961-65.--Water temperatures: Maximum, 78°F July 1, 2, 1963, July 21, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Complete ice cover during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	46	48	48	47	45	42	40	39	39	38	38	41	43	45	46	46	47	47	45	42	40	39	39	38	40	43	43	43	43	41	40	43
Minimum	44	46	45	45	43	40	38	38	38	37	37	38	40	42	44	44	46	45	42	40	39	39	38	37	38	40	42	43	41	39	39	41
November																																
Maximum	40	40	43	43	44	44	42	39	39	39	40	41	41	41	41	41	40	38	35	33	33	33	33	33	33	33	33	32	32	32	--	38
Minimum	39	40	40	43	43	42	39	38	38	38	39	40	41	41	41	40	38	36	33	33	33	33	33	33	33	33	33	32	32	32	--	37
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
April																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	34	34	38	38	38	43	46	--	34
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	34	34	38	36	38	44	--	33
May																																
Maximum	47	48	50	50	50	51	55	56	56	56	56	58	58	57	56	56	55	58	58	57	57	58	57	61	65	66	66	60	55	55	56	56
Minimum	45	46	48	49	48	48	51	55	56	55	54	56	56	56	56	54	52	55	56	55	56	55	56	56	60	64	60	54	51	52	52	54
June																																
Maximum	56	57	57	60	59	61	63	64	64	60	63	64	64	62	61	61	64	66	67	68	67	66	64	64	63	63	68	70	70	65	--	63
Minimum	55	54	54	54	57	57	59	62	60	56	56	59	58	56	55	56	56	57	59	64	61	62	61	58	58	58	60	65	63	57	--	58
July																																
Maximum	64	65	67	66	65	65	67	66	65	65	65	66	69	69	67	68	68	68	60	64	64	70	72	72	69	69	67	65	65	64	58	66
Minimum	58	61	61	61	60	58	61	61	61	59	59	60	64	64	61	62	62	62	59	59	60	63	67	69	63	62	60	62	58	58	58	61
August																																
Maximum	59	62	62	66	67	67	65	64	64	63	66	68	68	71	71	68	65	65	62	59	59	61	60	60	60	60	61	57	55	53	55	63
Minimum	58	56	59	60	61	64	63	62	60	58	58	64	63	64	64	61	60	61	56	54	56	57	54	57	56	58	57	53	50	52	52	58
September																																
Maximum	55	57	57	59	59	59	55	55	56	57	55	55	55	55	54	52	51	52	52	52	52	51	51	51	49	47	45	42	44	47	--	53
Minimum	53	51	55	56	58	55	54	50	53	55	51	52	54	51	52	51	51	51	52	52	51	51	51	49	47	45	42	42	42	44	--	51

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-581.2. GREEN CREEK NEAR PALMER, MICH.

LOCATION.--At gaging station at bridge on County Highway 565, 8.4 miles upstream from mouth, and 4.5 miles south of Palmer, Marquette County.
DRAINAGE AREA.--8.42 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1965 (discontinued).
Sediment records: October 1963 to September 1964, intermittent; October 1964 to September 1965 (discontinued).
EXTREMES, 1964-65.--Water temperatures: Maximum, 73°F Aug. 14; minimum, freezing point on many days during November to April.
Sediment concentrations: Maximum daily, 16 ppm May 6; minimum daily, 1 ppm on several days in October, March, and April.
Sediment loads: Maximum daily, 1.1 ton May 6, 7; minimum daily, less than 0.05 ton on several days in March, July, and August.
REMARKS.--Flow affected by an industrial tailings pond about 2 miles upstream from station.

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 0700 and 0900)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	53	53	53	48	43	--	40	43	38	42	43	47	44	56	47	53	54	48	43	42	40	42	38	43	46	41	48	45	44	42	42	45
November	44	42	46	42	40	41	39	--	41	40	42	42	41	40	42	40	36	35	33	32	32	32	32	32	33	32	32	32	32	32	--	37
December	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March	32	37	32	32	32	32	32	32	32	33	33	33	33	33	32	33	32	32	32	33	32	32	32	32	32	32	32	32	32	32	32	32
April	32	32	32	32	32	32	32	33	33	34	34	35	32	32	35	35	35	37	39	39	40	40	42	33	36	32	38	34	41	46	--	35
May	45	47	52	46	53	52	56	60	62	58	52	61	62	63	60	56	52	64	64	62	60	62	60	59	64	68	64	56	54	--	54	58
June	55	58	59	63	60	63	66	68	66	64	63	62	61	61	61	63	64	66	68	68	68	65	67	68	65	66	64	68	61	63	--	64
July	64	64	64	66	64	62	64	64	66	63	64	66	70	68	65	67	65	63	64	65	66	67	69	68	68	66	--	--	59	59	59	65
August	59	60	62	62	62	65	66	66	65	63	67	69	71	73	72	65	67	64	63	60	60	63	56	63	60	60	--	56	55	52	56	63
September	62	58	62	61	60	55	55	57	59	57	55	56	53	50	53	51	51	50	48	--	--	--	--	--	--	--	--	--	--	--	--	--

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-581.2. GREEN CREEK NEAR PALMER, MICH.--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..		4			9			4	
2..		1			8			2	
3..		--			8			4	
4..		1			14			2	
5..		1			12			2	
6..		1			8			4	
7..		3			8			4	
8..		1			10			6	
9..		5			6			--	
10..		2			8			--	
11..		5			7			--	
12..		4			5			--	
13..		2			3			--	
14..		2			3			--	
15..		2			2			--	
16..		1			2			--	
17..		1			3			--	
18..		1			2			--	
19..		1			2			--	
20..		8			4			--	
21..		5			5			--	
22..		7			2			--	
23..		4			4			--	
24..		12			2			--	
25..		8			4			--	
26..		6			3			--	
27..		5			2			--	
28..		10			2			--	
29..		6			4			--	
30..		10			4			--	
31..		11			--			--	
Total		--			--			--	

Day	JANUARY			FEBRUARY			MARCH		
1..							10	3	0.1
2..							10	3	.1
3..							10	2	.1
4..							10	2	.1
5..							10	2	.1
6..							10	2	.1
7..							10	2	.1
8..							10	2	.1
9..							10	1	T
10..							10	3	.1
11..							10	2	.1
12..							10	3	.1
13..							11	2	.1
14..							11	2	.1
15..							11	2	.1
16..							11	2	.1
17..							11	2	.1
18..							11	2	.1
19..							11	2	.1
20..							11	4	.1
21..							11	4	.1
22..							11	5	.1
23..							12	10	.3
24..							12	10	.3
25..							12	10	.3
26..							12	7	.2
27..							13	5	.2
28..							13	5	.2
29..							13	5	.2
30..							14	5	.2
31..							14	5	.2
Total							345	--	4.2

T Less than 0.05 ton.

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-581.2. GREEN CREEK NEAR PALMER, MICH.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL Mean discharge (cfs)	APRIL Suspended sediment: Mean concentration (ppm)	APRIL Suspended sediment: Tons per day	MAY Mean discharge (cfs)	MAY Suspended sediment: Mean concentration (ppm)	MAY Suspended sediment: Tons per day	JUNE Mean discharge (cfs)	JUNE Suspended sediment: Mean concentration (ppm)	JUNE Suspended sediment: Tons per day
1..	15	5	0.2	30	5	0.4	16	4	0.2
2..	16	5	.2	28	4	.3	15	3	.1
3..	16	5	.2	26	6	.4	15	3	.1
4..	17	4	.2	24	6	.4	13	5	.2
5..	19	4	.2	24	6	.4	12	6	.2
6..	20	4	.2	26	16	1.1	13	8	.3
7..	21	3	.2	32	13	1.1	13	8	.3
8..	23	3	.2	39	5	.5	14	10	.4
9..	25	2	.1	40	3	.3	13	8	.3
10..	27	2	.1	38	2	.2	13	10	.4
11..	30	3	.2	34	3	.3	11	10	.3
12..	32	3	.2	30	2	.2	10	11	.3
13..	37	1	.1	26	4	.3	9.0	9	.2
14..	41	5	.6	22	3	.2	9.0	4	.1
15..	36	6	.6	22	3	.2	9.0	5	.1
16..	34	3	.3	30	3	.2	9.0	3	.1
17..	37	1	.1	32	4	.3	8.6	3	.1
18..	35	2	.2	24	3	.2	8.6	8	.2
19..	36	4	.4	20	4	.2	8.6	6	.1
20..	36	2	.2	18	5	.2	11	7	.2
21..	40	2	.2	16	4	.2	11	7	.2
22..	41	2	.2	15	5	.2	11	6	.2
23..	42	2	.2	15	6	.2	10	7	.2
24..	38	4	.4	15	6	.2	9.2	5	.1
25..	36	5	.5	15	7	.3	9.0	7	.2
26..	34	7	.6	14	10	.4	7.0	9	.2
27..	34	6	.6	15	12	.5	26	9	.6
28..	32	4	.3	15	10	.4	13	8	.3
29..	30	4	.3	15	5	.2	9.0	7	.2
30..	31	4	.3	16	4	.2	9.0	7	.2
31..	—	—	—	16	4	.2	—	—	—
Total	911	—	8.3	732	—	10.4	345.0	—	6.6

Day	JULY Mean discharge (cfs)	JULY Mean concentration (ppm)	JULY Tons per day	AUGUST Mean discharge (cfs)	AUGUST Mean concentration (ppm)	AUGUST Tons per day	SEPTEMBER Mean discharge (cfs)	SEPTEMBER Mean concentration (ppm)	SEPTEMBER Tons per day
1..	7.0	5	0.1	15	—	0.3	7.0	7	0.1
2..	7.8	4	.1	9.0	—	.2	5.0	7	.1
3..	7.8	4	.1	11	—	.2	4.2	8	.1
4..	8.6	6	.1	11	—	.2	4.2	6	.1
5..	10	5	.1	11	—	.2	5.0	5	.1
6..	8.6	3	.1	10	7	.2	5.0	6	.1
7..	8.6	2	T	11	5	.1	5.0	9	.1
8..	8.6	2	T	11	4	.1	5.0	8	.1
9..	11	3	.1	13	4	.1	5.0	7	.1
10..	9.4	3	.1	11	4	.1	8.2	7	.2
11..	8.6	3	.1	11	8	.2	5.8	8	.1
12..	8.6	3	.1	8.6	6	.1	6.6	11	.2
13..	8.6	4	.1	6.2	6	.1	7.0	11	.2
14..	9.0	4	.1	5.8	8	.1	7.0	8	.2
15..	9.0	4	.1	6.2	5	.1	7.0	9	.2
16..	8.6	4	.1	7.0	6	.1	9.0	11	.3
17..	8.6	—	.1	7.6	7	.1	9.0	10	.2
18..	8.3	—	.1	7.0	12	.2	9.0	5	.1
19..	7.0	—	.1	7.0	12	.2	17	5	.2
20..	5.0	—	.1	7.0	8	.2	20	—	.3
21..	4.6	—	.1	9.0	12	.3	23	—	.3
22..	4.1	—	.1	7.0	11	.2	23	—	.3
23..	3.8	—	.1	5.0	4	.1	21	—	.3
24..	3.8	—	.1	4.2	3	T	20	—	.3
25..	7.0	—	.1	4.2	4	T	20	—	.3
26..	6.6	—	.1	5.0	4	.1	20	—	.3
27..	6.2	—	.1	5.8	5	.1	21	—	.3
28..	5.8	—	.1	7.0	3	.1	22	—	.3
29..	5.6	—	.1	5.8	3	T	24	—	.3
30..	5.8	—	.1	8.2	4	.1	26	—	.4
31..	18.8	—	.4	9.4	6	.2	—	—	—
Total	240.0	—	3.3	257.0	—	4.4	371.0	—	6.2

Total discharge for year (cfs-days).. 3201
Total load for year (tons).. 43.4

T Less than 0.05 ton.

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-582. SCHWEITZER CREEK NEAR PALMER, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 10 feet upstream from highway bridge, and 2.5 miles southwest of Palmer, Marquette County.
DRAINAGE AREA.--23.6 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1961 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 62°F Aug. 14; minimum, freezing point on many days during November to March.
EXTREMES, 1961-65.--Water temperatures: Maximum, 76°F July 26, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Complete ice cover during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	54	53	51	51	49	48	44	45	45	46	46	48	48	49	49	49	49	49	45	43	43	44	44	45	47	47	47	46	44	43	43	47
Minimum	51	51	49	49	48	44	43	44	44	44	43	46	46	46	46	45	46	45	43	43	42	42	42	43	43	44	44	44	43	41	41	45
November																																
Maximum	44	44	45	45	45	43	43	44	44	42	43	43	43	43	43	43	40	39	37	35	34	33	33	34	34	34	34	34	34	32	--	39
Minimum	42	43	43	45	43	42	41	42	42	42	42	43	43	43	43	40	39	38	35	34	33	33	33	33	34	34	34	33	33	32	--	39
December																																
Maximum	32	32	32	32	32	32	32	33	33	33	34	34	34	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	33	33	33	34	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	32	32	32	32	32	32	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	33	33	32	32	32	32	32	32	32	32	32	32	32	33	33	33	33	33	33	33	33	33	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	33	33	33	33	33	--	--	--	32
March																																
Maximum	34	35	35	35	35	35	35	35	35	34	34	35	35	35	36	36	36	33	33	33	33	--	--	--	32	32	32	33	34	36	37	34
Minimum	33	34	35	35	35	34	34	33	34	33	32	33	33	35	33	35	33	33	33	33	33	--	--	--	32	32	32	32	33	32	34	33
April																																
Maximum	37	40	40	40	40	40	37	40	37	38	36	35	38	37	35	36	36	37	37	37	36	37	36	36	36	37	36	38	39	39	--	37
Minimum	34	36	35	36	39	37	37	36	36	36	35	35	35	35	35	36	36	36	35	35	36	36	36	36	36	36	36	36	36	37	--	36
May																																
Maximum	39	40	40	41	41	41	45	48	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	38	38	39	39	39	40	41	45	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	59	56	58	59	59	57	58	54	57	57	53	55	60	61	58	57	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	53	45	44	45	45	48	46	47	47	45	45	44	46	51	47	43	--	--
July																																
Maximum	55	55	58	55	57	53	59	56	56	57	57	58	60	59	56	58	58	58	58	57	56	59	59	59	60	58	56	55	56	55	50	57
Minimum	44	48	46	46	46	44	48	47	49	46	46	47	51	49	47	48	48	49	46	47	48	50	50	52	48	48	47	49	47	47	50	48
August																																
Maximum	51	56	55	57	59	57	55	55	57	56	59	59	57	62	59	54	57	56	53	53	53	56	56	56	54	53	53	51	52	52	52	55
Minimum	50	47	49	50	49	50	51	52	50	48	48	51	49	51	50	49	49	51	48	48	48	50	48	50	49	52	49	48	46	49	49	49
September																																
Maximum	52	55	55	56	56	54	51	54	54	54	52	52	52	52	52	50	51	52	52	52	50	54	54	54	52	51	49	49	50	52	--	52
Minimum	48	48	51	51	53	49	50	48	50	52	46	49	51	48	50	49	50	51	52	50	50	50	54	52	51	49	46	48	49	50	--	50

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-595. FORD RIVER NEAR HYDE, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 40 feet downstream from county highway bridge, 1.4 miles downstream from Tenmile Creek, and 1.5 miles north of Hyde, Delta County.
DRAINAGE AREA.--450 square miles.
RECORDS AVAILABLE.--Water temperatures: July 1956 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 80°F July 24-26, Aug. 14; minimum, freezing point on many days during November to April.
EXTREMES, 1956-65.--Water temperatures: Maximum, 87°F July 21, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Complete ice cover during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	54	55	54	53	50	48	44	44	43	42	43	47	48	50	50	51	51	51	49	43	41	41	40	40	44	47	47	46	45	43	41	47
Minimum	50	53	51	50	48	45	43	43	40	40	40	43	46	46	48	48	50	49	44	41	41	40	37	37	40	44	46	45	42	40	40	44
November																																
Maximum	43	43	46	46	45	43	40	40	39	39	42	43	42	41	40	40	39	37	35	32	32	32	32	32	32	32	32	32	32	32	--	38
Minimum	41	42	43	45	43	40	38	38	38	39	39	42	41	40	40	39	37	35	32	32	32	32	32	32	32	32	32	32	32	32	--	37
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
April																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	32	34	36	36	36	36	39	41	45	47	--	34
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	34	34	34	34	35	37	39	44	--	33
May																																
Maximum	49	50	50	49	49	49	53	55	55	55	57	58	58	58	57	57	57	58	60	59	59	61	61	61	66	67	67	60	58	58	58	57
Minimum	46	46	49	46	46	48	49	53	54	53	53	55	55	55	55	54	52	54	55	55	56	58	57	58	59	64	60	56	53	54	54	54
June																																
Maximum	58	60	60	62	62	65	67	68	68	66	69	69	68	67	66	66	68	70	72	74	73	72	72	71	71	70	75	77	76	70	--	68
Minimum	56	55	56	57	59	59	62	64	64	61	61	65	62	62	62	64	63	65	67	70	68	68	67	67	66	67	68	72	68	64	--	64
July																																
Maximum	70	74	76	77	74	71	73	73	73	72	74	74	76	77	75	77	75	76	75	74	73	78	78	80	80	80	77	76	77	72	68	75
Minimum	67	68	70	71	70	66	68	70	68	68	68	69	72	73	71	72	72	70	68	68	69	71	75	75	74	72	71	71	68	67	66	70
August																																
Maximum	66	69	68	72	75	73	73	71	71	69	71	75	77	80	79	75	77	72	70	69	69	72	72	69	68	70	69	64	62	60	63	71
Minimum	64	62	64	65	69	71	71	67	65	66	66	71	73	73	75	72	71	69	65	63	66	66	64	64	65	66	64	60	58	58	58	66
September																																
Maximum	63	63	65	66	67	65	60	61	61	62	59	60	62	60	58	56	54	58	59	58	54	55	54	51	48	47	48	48	51	55	--	58
Minimum	59	59	61	63	64	60	59	57	59	60	55	56	58	57	56	53	53	54	58	54	53	54	52	48	45	46	47	46	46	51	--	55

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-622. PESHEKEE RIVER NEAR CHAMPION, MICH.

LOCATION.--Temperature recorder at gaging station on left bank, 10 feet downstream from bridge on county highway, 0.6 mile downstream from West Branch, and 3.5 miles northwest of Champion, Marquette County.
DRAINAGE AREA.--133 square miles.
RECORDS AVAILABLE.--Water temperatures: August 1961 to September 1962, October 1963 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 80°F July 23; minimum, freezing point on many days during November to April.
EXTREMES, 1961-62, 1963-65.--Water temperatures: Maximum, 81°F June 29, 30, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Complete ice cover during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	46	49	47	47	44	41	40	40	40	37	37	41	44	46	48	48	50	50	47	44	42	40	39	39	41	44	44	44	44	43	43	44
Minimum	44	46	45	44	41	39	38	38	36	36	36	37	41	43	45	46	48	46	43	42	40	39	38	37	38	41	44	44	43	43	41	41
November																																
Maximum	43	43	45	46	46	43	41	41	40	40	42	42	42	41	41	40	38	35	33	33	33	33	33	33	33	33	33	33	33	33	--	38
Minimum	42	42	43	45	43	41	39	39	39	40	40	42	41	40	40	38	35	33	33	33	33	33	33	33	33	33	33	33	33	32	--	37
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
April																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	36	34	36	38	38	--	33
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	34	34	34	35	--	32
May																																
Maximum	40	40	40	41	44	48	52	52	52	52	54	56	56	56	56	56	54	56	56	56	58	59	59	62	66	66	66	61	59	58	60	55
Minimum	35	36	38	38	40	44	48	48	49	52	52	54	54	55	56	53	52	54	54	54	55	55	56	58	62	65	61	55	52	55	54	51
June																																
Maximum	60	62	60	63	62	64	65	66	66	62	66	67	66	66	66	66	69	71	72	74	71	70	70	70	70	70	76	75	72	70	--	68
Minimum	58	56	57	57	61	61	63	64	62	60	59	62	61	59	58	59	60	62	64	64	65	67	66	62	63	64	66	68	67	62	--	62
July																																
Maximum	68	69	71	71	70	68	73	70	69	70	70	72	74	74	72	73	73	74	72	71	70	75	80	79	74	72	70	68	71	67	63	71
Minimum	62	66	65	65	64	62	66	64	65	62	62	64	68	67	64	66	66	66	62	62	64	68	70	71	65	63	62	64	60	62	63	65
August																																
Maximum	63	67	68	71	73	72	70	69	68	67	70	72	74	77	74	70	70	68	65	64	64	66	67	66	65	64	64	59	56	56	59	67
Minimum	61	56	61	63	64	67	67	64	62	58	60	67	65	68	66	64	64	64	60	56	58	60	56	60	60	62	58	53	50	54	54	61
September																																
Maximum	59	62	61	64	64	60	56	60	61	61	59	59	58	58	56	55	53	55	56	56	53	53	53	52	50	47	45	44	46	49	--	56
Minimum	54	52	58	58	62	56	56	50	56	56	49	53	56	52	53	51	52	53	55	54	51	53	52	50	47	45	43	43	44	46	--	52

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-624. MICHIGAMME RIVER NEAR WITCH LAKE, MICH.

LOCATION.--At gaging station on county highway (old State Highway 95), 0,4 mile upstream from Witch Lake Outlet, and 2.0 miles south of Witch Lake.
DRAINAGE AREA.--316 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1965.
Sediment records: October 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 74°F July 24, Aug. 14; minimum, freezing point on many days during November to March.
Sediment concentrations: Maximum daily, 73 ppm Apr. 28; minimum daily, 1 ppm Jan. 18, 19, Feb. 28.
Sediment loads: Maximum daily 419 tons May 7; minimum daily, 0.4 ton Jan. 18, 19, Feb. 28.
REMARKS.--Flow affected by ice Nov. 21-24, Dec. 1 to Apr. 9. Occasional regulation caused by dam 14 miles above station.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Sept. 20, 1965.	207									52	8.6	3.0		0.8		53	10		114	7.5	

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement, between 0900 and 1200)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	58	56	56	50	46	45	44	44	41	43	44	49	50	--	52	52	50	54	46	44	44	44	43	43	44	52	48	46	45	43	44	47
November	44	45	47	47	45	42	40	42	43	44	44	45	42	41	43	44	38	38	36	34	44	33	32	34	34	34	35	32	34	35	--	40
December	34	34	34	33	33	33	34	34	33	33	34	34	33	33	33	33	33	32	32	32	32	--	33	33	34	33	34	34	34	34	33	33
January	32	33	33	33	32	33	33	35	34	39	32	32	32	32	32	32	32	32	32	32	32	32	32	33	32	32	32	32	32	32	32	33
February	32	32	32	32	32	32	33	33	33	33	33	32	33	33	33	33	33	33	33	33	33	33	33	32	32	32	33	33	--	--	--	33
March	33	32	34	34	34	33	34	33	32	33	33	33	33	33	34	34	34	34	34	34	33	33	33	33	33	33	33	33	34	34	34	33
April	34	34	35	35	34	34	34	35	35	38	35	--	37	--	35	36	36	36	36	37	37	36	36	35	36	38	37	37	46	49	--	37
May	45	54	49	45	46	49	50	52	51	53	53	54	57	57	52	50	49	51	53	55	54	--	57	55	62	61	59	54	52	53	55	53
June	55	55	55	67	59	58	64	62	62	59	62	63	63	60	63	64	58	59	61	70	65	67	65	63	64	64	65	69	64	62	--	62
July	64	67	62	63	63	62	65	65	63	62	64	62	69	68	69	66	68	64	63	63	64	67	69	74	70	66	65	66	60	60	62	65
August	60	60	61	62	64	66	62	65	66	63	65	67	73	74	71	67	67	67	65	62	62	62	63	65	63	64	64	55	55	58	--	64
September	--	58	59	58	56	57	55	64	57	56	54	55	56	52	53	50	51	55	58	--	52	51	51	50	49	44	41	44	46	51	--	53

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-624. MICHIGAMME RIVER NEAR WITCH LAKE MICH.--Continued

Suspended sediment, water year October 1964 to September 1965

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	296	6	4.8	320	5	4.3	290	3	2.3
2..	330	5	4.4	316	4	3.4	270	4	2.9
3..	341	7	6.4	299	4	3.2	260	4	2.8
4..	338	7	6.4	302	3	2.4	260	3	2.1
5..	324	8	7.0	324	4	3.5	270	4	2.9
6..	313	7	5.9	324	4	3.5	270	5	3.6
7..	313	8	6.8	313	4	3.4	260	3	2.1
8..	313	7	5.9	292	6	4.7	250	5	3.4
9..	313	6	5.1	244	5	3.3	240	5	3.2
10..	310	9	7.5	278	8	6.0	220	3	1.8
11..	299	8	6.4	296	5	4.0	220	5	3.0
12..	282	7	5.3	341	6	5.5	220	8	4.8
13..	292	9	7.1	446	9	11	220	6	3.6
14..	306	7	5.8	426	9	10	220	5	3.0
15..	306	8	6.6	402	6	6.5	220	3	1.8
16..	313	11	9.3	386	5	5.2	220	3	1.8
17..	320	9	7.8	372	5	5.0	220	3	1.8
18..	316	10	8.5	366	6	5.9	220	4	2.4
19..	316	5	4.3	352	11	10	220	4	2.4
20..	352	6	5.7	338	7	6.4	220	4	2.4
21..	355	7	6.7	330	10	8.9	220	3	1.8
22..	372	7	7.0	320	12	10	220	3	1.8
23..	372	12	12	310	11	9.2	210	3	1.7
24..	366	10	9.9	310	9	7.5	200	4	2.2
25..	352	10	9.5	306	8	6.6	180	5	2.4
26..	334	9	8.1	185	8	4.0	180	3	1.4
27..	330	7	6.2	181	6	2.9	180	6	2.9
28..	330	5	4.4	235	3	1.9	170	6	2.8
29..	330	5	4.4	310	2	1.7	170	5	2.3
30..	330	7	6.2	302	3	2.4	170	4	1.8
31..	327	5	4.4	--	--	--	170	7	3.2
Total	10091	--	205.8	9526	--	162.3	6860	--	78.4

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	170	6	2.8	140	2	0.8	140	2	0.8
2..	170	5	2.3	140	2	.8	140	2	.8
3..	170	3	1.4	140	3	1.1	150	2	.8
4..	170	4	1.8	140	2	.8	150	3	1.2
5..	170	4	1.8	140	3	1.1	150	3	1.2
6..	170	4	1.8	140	3	1.1	150	3	1.2
7..	170	2	.9	140	2	.8	160	3	1.3
8..	170	2	.9	140	5	1.9	160	8	3.4
9..	170	3	1.4	140	5	1.9	160	10	4.3
10..	160	2	.9	140	3	1.1	160	10	4.3
11..	160	3	1.3	140	3	1.1	160	11	4.8
12..	160	3	1.3	140	2	.8	160	14	6.0
13..	160	3	1.3	140	2	.8	150	14	5.7
14..	160	3	1.3	130	5	1.8	150	16	6.5
15..	160	3	1.3	130	3	1.0	150	12	4.9
16..	160	2	.9	130	2	.7	150	11	4.4
17..	160	2	.9	130	4	1.4	150	10	4.0
18..	160	1	.4	130	4	1.4	150	11	4.4
19..	160	1	.4	130	3	1.0	150	10	4.0
20..	160	2	.9	130	3	1.0	150	10	4.0
21..	160	4	1.7	130	4	1.4	150	10	4.0
22..	160	4	1.7	140	3	1.1	150	9	3.6
23..	160	3	1.3	140	3	1.1	150	17	6.9
24..	160	2	.9	140	3	1.1	150	12	4.9
25..	160	2	.9	140	2	.8	150	9	3.6
26..	150	5	2.0	140	2	.8	160	13	5.6
27..	150	3	1.2	140	2	.8	160	11	4.8
28..	140	3	1.1	140	1	.4	160	8	3.4
29..	140	3	1.1	--	--	--	160	4	1.7
30..	140	2	.8	--	--	--	160	2	.9
31..	140	3	1.1	--	--	--	160	2	.9
Total	4950	--	39.8	3840	--	29.9	4750	--	108.3

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-624. MICHIGAMME RIVER NEAR WITCH LAKE MICH.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued

Day	APRIL Mean discharge (cfs)	APRIL Suspended sediment Mean concentration (ppm)	APRIL Suspended sediment Tons per day	MAY Mean discharge (cfs)	MAY Suspended sediment Mean concentration (ppm)	MAY Suspended sediment Tons per day	JUNE Mean discharge (cfs)	JUNE Suspended sediment Mean concentration (ppm)	JUNE Suspended sediment Tons per day
1..	160	2	0.9	1790	70	338	580	10	16
2..	160	2	.9	1940	54	283	580	7	11
3..	160	2	.9	2240	44	266	600	7	11
4..	160	2	.9	2520	45	306	540	7	10
5..	160	4	1.7	2800	45	340	500	8	11
6..	160	5	2.2	3020	39	318	470	5	6.3
7..	170	5	2.3	3040	51	419	500	5	6.8
8..	180	3	1.4	3150	44	374	540	6	8.7
9..	210	4	2.3	3590	42	407	540	5	7.3
10..	223	6	3.6	4150	28	314	500	5	6.8
11..	235	6	3.8	4310	20	233	486	6	7.9
12..	398	17	18	4070	18	198	470	5	6.3
13..	482	15	20	3590	13	126	462	3	3.7
14..	530	13	19	3020	15	122	450	7	8.5
15..	502	13	18	2500	16	108	418	6	6.8
16..	482	15	20	2300	35	217	313	8	6.8
17..	518	15	21	2360	25	159	229	5	3.1
18..	554	12	18	2240	29	175	220	5	3.0
19..	674	23	42	2100	40	227	218	10	5.9
20..	810	26	57	1900	33	169	220	11	6.5
21..	870	28	66	1600	37	160	238	8	5.1
22..	862	25	58	1410	32	122	244	8	5.3
23..	1010	53	144	1250	25	84	223	8	4.8
24..	1290	65	226	1100	30	89	210	11	6.2
25..	1250	59	199	1000	27	73	206	9	5.0
26..	1280	51	176	900	20	49	203	9	4.9
27..	1380	61	227	750	9	18	185	9	4.5
28..	1460	73	288	900	13	32	187	9	4.5
29..	1470	62	246	840	13	29	181	10	4.9
30..	1540	53	220	700	11	21	178	7	3.4
31..	--	--	--	620	9	15	--	--	--
Total	19340	--	2103.9	67700	--	5791	10891	--	202.0

Day	JULY Mean discharge (cfs)	JULY Suspended sediment Mean concentration (ppm)	JULY Suspended sediment Tons per day	AUGUST Mean discharge (cfs)	AUGUST Suspended sediment Mean concentration (ppm)	AUGUST Suspended sediment Tons per day	SEPTEMBER Mean discharge (cfs)	SEPTEMBER Suspended sediment Mean concentration (ppm)	SEPTEMBER Suspended sediment Tons per day
1..	176	6	2.8	120	6	1.9	60	--	2
2..	166	8	3.6	122	6	2.0	60	--	2
3..	158	7	3.0	123	8	2.6	80	--	3
4..	162	4	1.7	134	8	2.9	100	--	4
5..	181	6	2.9	136	7	2.6	110	--	4
6..	176	6	2.8	136	7	2.6	120	--	5
7..	172	7	3.2	123	5	1.7	130	15	5.3
8..	203	8	4.4	104	4	1.1	130	16	5.6
9..	198	12	6.4	96	5	1.3	130	17	6.0
10..	187	13	6.6	105	5	1.4	120	17	5.5
11..	181	12	5.9	95	8	2.0	92	18	4.5
12..	147	17	6.7	56	8	1.2	80	17	3.7
13..	141	12	4.6	50	8	1.1	56	17	2.6
14..	140	10	3.8	46	13	1.6	54	18	2.6
15..	140	10	3.8	74	21	4.2	50	20	2.7
16..	140	14	5.3	86	19	4.4	50	17	2.3
17..	140	15	5.7	100	25	6.8	70	19	3.6
18..	138	11	4.1	105	--	4	130	20	7.0
19..	120	11	3.6	105	--	4	180	18	8.7
20..	107	8	2.3	100	--	4	210	17	9.6
21..	105	7	2.0	100	--	4	236	16	10
22..	107	4	1.2	100	--	4	278	17	13
23..	105	5	1.4	100	--	4	292	16	13
24..	105	5	1.4	100	--	4	201	18	10
25..	102	7	1.9	90	--	4	172	18	8.4
26..	98	6	1.6	72	--	3	160	19	8.2
27..	98	8	2.1	66	--	3	152	16	6.6
28..	71	8	1.5	64	--	3	156	13	5.5
29..	55	4	.6	62	--	2	164	11	4.9
30..	89	5	1.2	62	--	2	201	10	5.4
31..	111	7	2.1	60	--	2	--	--	--
Total	4219	--	100.2	2892	--	88.4	4024	--	174.7

Total discharge for year (cfs-days).. 149083
Total load for year (tons).. 9084.7

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-637. POPPLE RIVER NEAR FENCE, WIS.

LOCATION.--Temperature recorder at gaging station on left bank, 20 feet upstream from U.S. Forest Service Road 2159, 1.8 miles downstream from Mud Creek, 2.6 miles northwest of Fence, Florence County, and 11.5 miles upstream from mouth.
DRAINAGE AREA.--131 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 79°F Aug. 14; minimum, freezing point on many days during November to April.
EXTREMES, June 1964 to September 1965.--Water temperatures: Maximum, 83°F July 24, 1964; minimum, freezing point on many days during winter months.

Chemical analyses, in parts per million, October 1963 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color
Oct. 25, 1963.										136	5.6	0.0	0.1	0.2	132	112	1		217	6.8	
Apr. 15, 1965.				0.57	0.22					40	11	1.0	.1	2.9	A68	45	12		94	6.4	45

A Loss on ignition 38 ppm.

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-637. POPPLE RIVER NEAR FENCE, WIS.--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	50	52	52	51	47	45	43	43	42	41	41	45	48	49	51	52	51	51	47	43	41	41	42	42	46	49	48	47	44	43	43	46
Minimum	48	50	49	47	45	42	41	41	39	37	38	41	45	45	46	47	49	47	43	41	41	41	39	36	41	45	46	44	42	40	41	43
November																																
Maximum	45	44	48	48	47	44	41	42	43	43	45	45	44	43	41	42	39	36	34	32	32	32	32	32	32	32	32	32	32	32	--	39
Minimum	43	43	44	47	44	41	39	39	42	43	43	44	43	41	40	38	36	34	32	32	32	32	32	32	32	32	32	32	32	32	--	38
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
April																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	35	38	38	36	36	38	41	42	47	50	--	35
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	34	35	34	33	33	36	37	40	45	--	33
May																																
Maximum	51	53	52	51	52	53	56	55	55	54	58	60	60	59	59	59	57	59	60	60	61	62	61	61	66	67	66	57	57	55	58	58
Minimum	48	48	51	48	48	49	52	53	53	52	50	55	55	57	58	54	51	55	55	56	58	58	59	58	60	65	57	53	50	53	55	54
June																																
Maximum	58	58	59	62	61	65	66	67	65	64	66	68	67	67	66	63	66	69	71	73	72	71	69	69	69	69	73	73	71	68	--	67
Minimum	55	54	55	57	59	58	62	63	61	58	59	63	61	59	59	59	57	58	63	67	65	65	64	61	61	63	64	67	64	60	--	61
July																																
Maximum	68	69	71	73	72	71	73	71	71	71	71	73	73	74	71	73	73	73	71	70	67	75	75	76	74	74	71	71	70	69	66	72
Minimum	61	65	64	65	65	63	63	65	65	63	63	66	69	68	65	67	68	68	63	64	64	67	70	71	68	67	67	67	64	65	64	66
August																																
Maximum	65	66	66	69	72	72	72	70	70	69	72	75	77	79	78	76	72	72	68	67	66	67	67	67	66	67	67	61	60	57	61	69
Minimum	63	59	62	63	64	69	70	67	64	64	65	70	72	73	73	71	69	68	64	63	63	63	62	63	63	64	61	56	55	55	55	64
September																																
Maximum	60	62	62	63	64	63	58	59	62	61	59	59	59	58	55	54	54	57	57	57	54	54	54	51	49	47	46	45	46	49	--	56
Minimum	57	55	59	60	62	58	57	55	57	59	54	55	57	55	54	51	51	54	56	54	53	53	51	49	47	45	44	44	45	45	--	53

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-637. POPPLE RIVER NEAR FENCE, WIS.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.006	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Oct. 24, 1964	1630			56	4	0.6												
Apr. 8, 1965	1900			81	2	.4												
Apr. 15	1330			349	12	11												
May 11	1630			1040	12	34												
June 22	1530			72	4	.8												

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-655. STURGEON RIVER NEAR FOSTER CITY, MICH.

LOCATION.--Temperature recorder at gaging station on left bank, 30 feet downstream from bridge on County Highway 569, 1.8 miles downstream from confluence of East and West Branches, and 4 miles south of Foster City, Dickinson County.
DRAINAGE AREA.--237 square miles.
RECORDS AVAILABLE.--Water temperatures: July 1956 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 81°F Aug. 14; minimum, freezing point on many days during November to April.
EXTREMES, 1956-65.--Water temperatures: Maximum, 86°F July 1, 1963; minimum, freezing point on many days during winter months.
REMARKS.--Recorder inoperative Sept. 19 to Sept. 30.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	50	54	53	51	48	46	43	44	43	44	44	47	50	52	53	54	53	53	49	46	44	43	43	43	47	49	49	49	47	47	46	48
Minimum	48	50	50	48	46	43	42	43	40	40	39	42	46	47	48	49	50	49	46	44	43	41	40	39	40	43	47	47	45	43	43	45
November																																
Maximum	47	47	50	49	49	47	43	43	42	43	45	45	45	43	43	42	40	38	36	33	32	32	32	32	32	32	32	32	32	32	--	40
Minimum	44	45	47	48	47	43	42	40	42	42	43	44	43	42	42	40	38	36	32	32	32	32	32	32	32	32	32	32	32	32	--	38
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
April																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	34	34	36	36	38	38	37	36	38	40	42	46	51	--	35
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	34	35	35	37	36	35	34	38	38	40	46	--	34
May																																
Maximum	50	52	52	52	50	51	55	56	56	56	58	61	60	60	60	60	58	60	62	61	62	63	62	62	67	63	68	60	59	58	59	58
Minimum	48	48	50	48	48	48	52	55	56	55	55	58	58	58	58	56	54	56	58	58	58	59	58	59	61	66	60	56	54	55	56	55
June																																
Maximum	59	59	59	52	52	64	67	68	66	64	68	69	68	68	66	66	69	72	73	74	74	71	72	71	72	70	75	77	74	72	--	68
Minimum	56	54	55	57	60	60	62	64	62	60	60	64	62	61	60	60	60	62	65	69	67	67	66	65	65	65	66	70	68	64	--	63
July																																
Maximum	70	72	74	75	73	70	73	70	72	72	73	73	74	74	74	74	74	74	72	71	69	76	76	76	76	75	73	72	73	70	66	73
Minimum	64	66	66	67	67	64	65	66	66	64	65	66	69	69	67	69	69	68	65	66	65	67	72	71	69	68	67	68	65	65	64	67
August																																
Maximum	65	68	68	70	72	72	71	69	71	71	73	76	78	81	79	74	75	72	70	70	68	71	69	70	70	70	70	65	62	61	64	70
Minimum	63	60	63	64	65	68	69	66	65	64	64	69	71	72	72	70	69	67	64	63	65	65	63	67	65	66	64	60	57	58	58	65
September																																
Maximum	63	64	64	66	68	66	62	63	63	64	62	62	63	62	61	58	56	60	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	59	58	61	62	64	62	61	58	60	61	56	58	59	58	58	55	54	56	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-1110. GRAND RIVER NEAR EATON RAPIDS, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 400 feet upstream from bridge on Petrieville Highway, 2 miles northeast of Eaton Rapids, Eaton County, 2.5 miles downstream from Spring Brook, 25 miles upstream from Cedar River, and at mile 178.
DRAINAGE AREA.--661 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 90°F July 23; minimum, freezing point on several days during December, February and March.
EXTREMES, 1963-65.--Water temperatures: Maximum, 95°F Aug. 2, 1964; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	62	60	65	62	54	51	54	52	50	48	54	48	51	53	56	56	57	55	50	47	46	47	46	49	53	51	49	52	52	47	47	52
Minimum	53	57	53	54	50	48	44	49	47	44	40	43	44	45	47	48	48	50	47	44	44	42	42	42	44	49	44	49	47	41	42	46
November																																
Maximum	51	53	55	54	54	48	48	49	50	50	52	53	50	49	47	49	46	44	42	41	36	35	34	35	36	36	36	38	38	34	--	45
Minimum	43	49	51	48	49	43	47	47	46	48	49	50	45	40	42	46	43	41	41	36	35	34	34	34	34	34	34	36	34	33	--	42
December																																
Maximum	34	34	34	34	33	34	33	33	34	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	34	34	33	33	33	34	34	33
Minimum	34	33	33	33	33	33	33	33	33	33	32	32	33	33	33	32	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
January																																
Maximum	33	34	34	34	34	35	36	38	38	36	36	35	35	34	34	34	34	34	33	33	33	33	33	33	33	33	33	33	33	34	34	34
Minimum	33	33	33	33	34	34	34	36	36	35	35	34	34	34	34	34	34	34	33	33	33	33	33	33	33	33	33	33	33	33	34	34
February																																
Maximum	34	34	34	34	34	33	33	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	33	33	33	33	33	32	--	--	--	33
Minimum	34	34	34	34	33	33	33	33	33	33	32	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	32	--	--	--	33
March																																
Maximum	32	32	32	32	32	32	33	33	33	33	34	34	35	36	36	38	37	35	34	34	34	35	34	35	35	35	37	38	38	40	40	35
Minimum	32	32	32	32	32	32	32	32	33	33	32	34	34	35	35	36	35	33	33	33	33	34	33	34	34	34	34	34	37	36	37	34
April																																
Maximum	40	40	41	39	39	41	43	43	45	47	49	50	50	49	48	48	47	46	47	50	53	57	57	56	54	50	50	54	57	60	--	48
Minimum	37	36	37	38	38	38	40	43	43	45	48	49	48	48	48	47	46	44	45	47	49	52	55	54	52	48	47	48	50	54	--	46
May																																
Maximum	61	65	69	66	68	68	74	74	75	75	73	74	74	76	70	71	69	70	70	70	72	73	72	69	72	71	70	68	63	66	68	70
Minimum	57	59	61	64	62	63	64	68	71	72	69	66	66	66	68	66	65	62	64	62	62	68	64	63	67	68	67	60	59	57	60	64
June																																
Maximum	71	69	69	69	69	73	71	75	75	76	76	77	84	76	76	73	73	75	74	76	76	76	74	76	77	77	88	80	78	77	--	75
Minimum	65	65	60	62	64	68	69	68	70	69	68	70	67	66	69	68	68	68	68	69	72	68	72	70	68	69	62	76	74	71	--	68
July																																
Maximum	86	75	87	86	78	78	75	79	80	87	88	85	87	87	87	77	78	83	80	78	82	82	90	87	82	86	82	78	77	79	73	82
Minimum	69	71	71	70	74	70	72	70	74	70	74	74	73	77	72	71	72	70	70	69	68	72	75	78	74	72	75	72	67	66	70	72
August																																
Maximum	72	70	70	75	80	85	80	76	74	75	78	79	83	88	89	83	75	75	80	76	72	77	73	74	68	74	74	69	71	67	66	76
Minimum	69	66	63	67	69	73	73	72	70	68	64	67	71	72	74	74	72	72	71	66	68	69	66	63	65	66	67	64	59	64	65	68
September																																
Maximum	72	71	71	74	78	72	72	71	75	72	69	71	72	71	70	66	71	73	75	76	74	72	71	65	68	61	58	62	64	61	--	70
Minimum	64	62	64	66	70	66	69	69	68	67	61	63	64	66	66	62	62	69	69	70	70	70	68	62	60	56	50	55	58	60	--	64

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-1140. GRAND RIVER AT PORTLAND, MICH.

LOCATION.--Temperature recorder at gaging station on left bank at downstream side of bridge on Kent Street, 1.0 mile south of Portland, Iona County, 1.9 miles upstream from Lookingglass River, and at mile 115.
DRAINAGE AREA.--1,385 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1963 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 88°F Aug. 15; minimum, freezing point on many days during December to March.
EXTREMES, 1963-65.--Water temperatures: Maximum, 95°F Aug. 3, 1964; minimum, freezing point on many days during winter months.
REMARKS.--No temperature record Oct. 30 to Nov. 2 (range 44°F to 50°F); Nov. 28-30 (range 36°F to 39°F): Dec. 6-19, Jan. 6 to Feb. 5 (range 32°F to 40°F); July 17-20 (range 69°F to 82°F).

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	63	62	62	61	57	56	54	54	54	52	53	51	56	58	59	60	58	60	57	54	51	51	51	52	55	55	54	57	56	--	--	56
Minimum	57	59	57	57	56	53	50	54	51	50	48	50	50	52	54	55	56	57	54	52	50	48	48	48	50	51	52	54	52	--	--	53
November																																
Maximum	--	--	58	58	57	56	53	54	54	55	56	55	52	50	48	51	50	47	44	42	38	36	35	35	36	37	36	--	--	--	--	48
Minimum	--	--	53	55	55	53	53	52	52	53	53	53	50	48	48	48	46	44	43	38	36	35	35	35	35	35	35	--	--	--	--	46
December																																
Maximum	34	34	34	33	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	33	33	32	32	32	32	32	33	33	33	34	34	--
Minimum	34	34	33	33	33	--	--	--	--	--	--	--	--	--	--	--	--	--	33	33	33	32	32	32	32	32	32	33	33	33	34	--
January																																
Maximum	34	35	35	34	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	34	34	34	34	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
February																																
Maximum	--	--	--	--	--	32	32	32	32	33	33	33	32	32	33	33	34	34	34	33	34	32	32	32	32	32	32	32	--	--	--	33
Minimum	--	--	--	--	--	32	32	32	32	32	33	33	32	32	32	33	33	33	33	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	33	36	37	37	34	34	34	35	34	36	37	37	37	37	40	40	37	36	36	35	36	36	36	36	39	40	41	41	42	43	37
Minimum	32	32	34	36	35	34	34	34	34	34	34	36	36	36	36	37	35	35	34	34	34	34	34	34	34	35	35	38	39	37	39	35
April																																
Maximum	42	41	43	42	41	42	43	41	45	47	50	51	52	51	51	51	50	50	51	54	57	59	59	58	58	55	58	61	62	64	--	51
Minimum	36	36	39	41	40	40	40	41	41	44	46	50	49	50	50	50	47	46	48	51	53	55	57	56	55	54	52	56	57	60	--	48
May																																
Maximum	66	67	71	70	68	68	75	75	76	77	72	71	72	72	68	72	70	71	74	74	75	77	74	72	77	75	72	66	62	66	66	71
Minimum	62	64	65	66	64	66	66	72	73	74	69	65	65	66	66	66	64	60	66	66	66	70	68	64	69	70	66	59	57	57	59	65
June																																
Maximum	72	69	67	70	67	73	70	73	75	76	77	77	75	74	71	71	76	76	80	80	82	81	79	80	79	79	83	85	81	80	--	76
Minimum	62	62	60	61	64	66	67	66	68	68	68	68	66	66	66	64	66	68	69	72	74	73	75	71	71	71	73	77	77	73	--	68
July																																
Maximum	81	74	80	80	77	79	73	80	81	81	83	84	83	82	81	75	--	--	--	--	81	83	85	85	85	85	83	77	75	79	72	80
Minimum	67	71	70	70	72	68	70	68	74	71	72	73	72	75	72	70	--	--	--	--	68	72	74	79	75	73	74	72	66	66	69	71
August																																
Maximum	73	71	68	73	82	85	81	80	76	77	80	81	86	87	88	87	79	77	80	77	72	80	78	77	77	77	76	72	70	67	64	77
Minimum	66	65	63	66	69	76	76	74	72	68	67	69	73	77	79	79	75	74	72	70	70	68	66	68	67	66	69	66	62	63	62	70
September																																
Maximum	68	70	72	72	73	70	67	67	70	71	67	68	71	69	67	64	74	74	78	78	75	72	69	65	62	60	56	57	62	62	--	68
Minimum	62	62	64	65	68	66	65	65	65	67	63	61	62	66	64	60	66	66	70	72	71	69	65	61	58	56	52	54	57	61	--	63

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-1215. MUSKEGON RIVER AT EVART, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 500 feet downstream from bridge on U.S. Highway 10 at Evart, Osceola County, 0.4 mile upstream from Twin Creek, and at mile 123.9.
DRAINAGE AREA.--1,450 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: November 1956 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 78°F July 24; minimum, freezing point on many days during December to April.
EXTREMES, 1956-65.--Water temperatures: Maximum, 82°F July 1, 1963; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	55	54	55	54	50	49	46	45	45	45	45	45	48	49	51	51	52	52	50	47	45	44	43	44	47	48	48	51	50	48	46	48
Minimum	50	53	51	50	48	46	43	45	44	43	41	43	44	46	47	47	48	50	47	45	44	43	41	41	42	45	45	48	48	45	44	46
November																																
Maximum	46	46	49	51	51	48	47	48	49	49	50	50	50	47	44	45	44	41	40	38	34	33	33	34	34	34	34	36	35	33	--	42
Minimum	44	46	46	48	48	46	46	46	47	48	48	49	47	44	43	43	41	40	38	34	33	33	33	33	33	34	34	34	33	33	--	41
December																																
Maximum	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	32	32	32	32	33	33	33	33	33
Minimum	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32	32	33	33	33	33
January																																
Maximum	33	33	33	33	33	33	34	34	34	32	32	32	32	33	33	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33
Minimum	33	33	33	33	33	33	33	34	32	32	32	32	32	32	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	33	32	32	32	32	33	33	33	33	33	33	33	32	32	33	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	32	32	32	32	32	--	--	--	32
March																																
Maximum	33	33	32	32	32	32	32	32	33	33	34	33	32	32	32	33	33	33	33	33	34	34	34	33	34	35	35	35	34	35	35	33
Minimum	32	32	32	32	32	32	32	32	32	33	33	32	32	32	32	32	33	33	33	33	33	33	33	33	33	33	33	33	33	32	32	32
April																																
Maximum	32	36	38	40	40	40	39	38	39	37	37	35	35	35	36	36	37	39	41	43	44	46	46	47	46	45	45	48	50	54	--	41
Minimum	32	32	33	37	38	39	38	37	37	36	35	34	34	35	35	36	36	36	39	41	43	44	46	46	45	45	44	45	48	50	--	39
May																																
Maximum	55	57	60	60	57	58	61	65	68	68	68	66	65	63	62	63	62	62	63	63	64	65	65	63	67	68	67	61	60	59	61	63
Minimum	54	55	57	57	55	56	58	61	65	66	66	64	61	61	61	62	60	59	60	60	61	63	62	61	62	65	61	57	55	55	57	60
June																																
Maximum	61	61	62	62	63	68	68	68	69	69	69	69	69	68	67	67	67	68	70	72	73	71	69	69	69	69	73	75	74	71	--	68
Minimum	58	59	57	58	60	62	66	64	65	65	64	65	64	63	63	62	62	62	63	66	67	66	67	64	63	64	65	70	69	66	--	64
July																																
Maximum	71	69	70	71	72	70	69	72	72	71	71	73	74	76	75	73	70	70	70	69	69	72	76	78	76	74	72	70	67	68	67	72
Minimum	64	65	63	64	67	64	66	66	69	64	64	65	68	70	70	69	67	65	64	63	62	66	68	72	70	68	66	65	61	61	63	66
August																																
Maximum	63	65	63	65	70	74	73	72	68	67	67	69	72	75	76	74	71	69	68	67	65	65	65	66	65	64	65	64	61	60	56	67
Minimum	62	60	53	60	62	67	70	63	55	53	52	64	57	59	71	70	53	55	54	53	52	52	50	51	53	52	52	50	55	55	55	53
September																																
Maximum	58	61	62	64	66	64	61	63	63	64	63	59	61	61	60	58	56	61	64	65	67	67	64	62	58	57	54	52	53	54	--	61
Minimum	55	55	57	59	63	60	59	59	61	62	59	57	58	60	58	55	55	56	60	64	65	64	62	58	56	54	52	51	51	53	--	58

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-1235. MANISTEE RIVER NEAR GRAYLING, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 25 feet upstream from bridge on State Highway 72, 2.5 miles downstream from Goose Creek, and 6.5 miles northwest of Grayling, Crawford County.
DRAINAGE AREA.--159 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1957 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 74°F June 28, July 24; minimum, freezing point on many days during November to February.
EXTREMES, 1957-65.--Water temperatures: Maximum, 76°F July 1, 1963; minimum, freezing point on many days during winter months.
REMARKS.--Recorder stopped Mar. 2-4; range 35°F to 38°F.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	52	52	51	51	48	46	44	44	44	43	44	46	49	49	50	50	51	52	50	47	45	45	45	46	49	51	51	50	50	46	45	48
Minimum	47	50	47	48	45	44	42	43	43	42	41	44	46	46	46	46	47	50	47	45	43	43	43	43	44	48	47	49	46	43	43	45
November																																
Maximum	47	48	51	51	51	47	46	46	49	49	48	47	47	44	44	45	44	41	39	38	36	34	34	37	38	38	36	37	36	32	--	43
Minimum	45	47	48	49	47	43	45	44	46	48	47	46	44	41	42	44	41	39	38	36	34	34	33	34	36	36	35	35	32	32	--	41
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	35	35	36	35	32	32	32	32	32	32	32	32	35	36	36	36	35	32	32	33	34	33
Minimum	32	32	32	32	32	32	32	32	32	32	32	35	35	32	32	32	32	32	32	32	32	32	32	35	36	35	32	32	32	32	33	33
January																																
Maximum	34	33	33	34	34	35	37	38	38	32	32	32	32	33	33	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33
Minimum	33	32	32	33	34	34	35	37	32	32	32	32	32	32	32	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	34	34	35	36	36	33	33	36	36	36	35	34	33	33	33	33	33	33	33	33	33	--	--	--	34
Minimum	32	32	32	32	32	32	32	32	32	33	35	33	33	33	33	34	34	34	33	33	33	33	33	33	33	33	33	33	--	--	--	33
March																																
Maximum	36	--	--	--	40	40	40	40	40	38	37	39	39	37	37	37	37	34	34	34	34	34	36	36	35	38	37	39	38	42	42	38
Minimum	33	--	--	--	37	38	37	36	37	35	33	34	34	36	35	36	33	33	33	33	34	34	34	34	34	34	34	35	36	36	36	35
April																																
Maximum	42	43	44	44	45	45	42	46	46	49	49	48	44	44	44	42	41	47	49	51	51	50	50	47	47	44	50	52	53	55	--	47
Minimum	38	36	38	40	42	41	42	41	44	43	45	41	40	41	42	40	39	41	45	46	45	44	46	42	44	43	42	45	46	49	--	42
May																																
Maximum	55	56	56	56	57	57	62	65	64	61	61	60	58	58	58	57	57	59	60	60	62	63	62	60	65	65	65	53	55	55	54	59
Minimum	48	48	53	50	49	53	52	58	59	55	55	53	50	51	54	56	52	52	53	52	53	57	55	54	57	60	53	49	47	50	51	53
June																																
Maximum	54	58	61	62	63	69	67	64	67	67	67	68	65	63	61	60	62	65	68	67	69	66	63	64	66	67	72	74	72	68	--	65
Minimum	51	52	52	53	55	61	64	58	58	59	58	60	57	57	56	54	55	56	58	62	61	60	61	57	57	58	61	68	63	59	--	58
July																																
Maximum	67	65	68	69	70	66	69	70	69	66	67	70	69	72	70	68	65	62	63	63	66	68	72	74	70	69	68	66	61	64	63	67
Minimum	58	60	60	60	63	57	61	62	63	57	58	60	64	64	62	62	61	57	56	56	57	63	65	66	62	61	60	61	56	55	59	60
August																																
Maximum	59	63	61	65	68	71	71	68	64	65	65	68	70	72	71	69	66	66	63	62	61	61	62	63	62	60	61	60	57	57	54	64
Minimum	58	56	55	55	60	64	66	64	61	59	59	62	64	64	66	62	62	60	57	55	58	59	56	57	59	59	58	56	52	54	54	59
September																																
Maximum	57	59	62	61	65	63	56	59	59	58	56	57	60	60	58	54	54	61	62	62	61	61	57	55	52	52	49	48	49	52	--	57
Minimum	53	54	56	57	61	56	55	54	57	56	51	52	55	57	54	52	52	54	59	61	60	57	55	51	49	49	45	46	48	49	--	54

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-1262. LITTLE MANISTEE RIVER NEAR FREESOIL, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 25 feet upstream from Sixmile Bridge, 5.8 miles north of Freesoil, Mason County, 7.4 miles upstream from mouth, and 9.0 miles southeast of Manistee.
DRAINAGE AREA.--200 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1956 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 70°F July 24; minimum, freezing point on many days during December to February.
EXTREMES, 1956-65.--Water temperatures: Maximum, 72°F June 17, 18, 1957; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	53	54	54	52	49	47	44	46	46	44	44	46	48	50	50	50	50	51	49	46	45	46	46	46	48	50	50	51	50	47	46	48
Minimum	49	52	50	49	47	44	42	44	44	43	41	43	44	47	46	46	47	49	46	44	45	45	44	42	44	46	46	49	46	44	43	46
November																																
Maximum	48	49	52	51	51	48	48	48	51	51	51	52	50	46	47	48	46	43	42	40	37	36	38	40	41	40	39	41	39	36	--	45
Minimum	45	47	49	49	48	45	47	47	48	50	49	50	46	44	45	46	43	42	40	37	35	35	35	38	39	39	38	39	36	34	--	43
December																																
Maximum	34	36	36	35	35	35	34	34	35	37	39	40	40	38	34	35	35	33	34	34	34	37	39	40	40	40	37	33	34	37	37	36
Minimum	34	34	35	34	34	34	34	33	34	35	37	39	38	34	33	34	33	33	33	34	34	34	37	39	40	37	32	32	32	34	36	35
January																																
Maximum	36	36	35	36	37	37	40	41	40	34	33	33	33	32	32	33	33	33	33	33	34	33	33	33	33	33	33	32	34	33	33	34
Minimum	36	35	35	35	36	36	37	40	34	32	33	33	32	32	32	32	32	33	33	33	33	33	32	33	33	33	32	32	32	33	32	34
February																																
Maximum	33	33	33	33	34	34	33	34	34	37	38	38	35	36	37	36	37	37	35	36	36	33	34	34	35	35	36	37	--	--	--	35
Minimum	32	33	33	33	33	33	33	32	32	34	37	35	34	34	35	34	35	35	33	33	33	33	33	34	34	34	34	34	--	--	--	34
March																																
Maximum	42	42	41	41	42	41	42	41	39	38	38	40	39	38	40	41	39	36	35	35	35	35	39	38	36	39	38	41	41	43	44	39
Minimum	35	39	41	41	40	39	38	37	38	36	34	36	36	37	38	38	35	34	34	33	34	34	35	34	34	34	34	37	38	37	38	36
April																																
Maximum	41	44	45	43	46	44	43	43	44	46	46	46	46	44	43	42	43	47	49	52	51	52	51	50	49	48	52	53	54	58	--	47
Minimum	37	36	38	40	42	42	42	41	41	41	44	43	40	40	42	41	39	41	43	47	48	47	49	47	46	46	45	47	47	51	--	43
May																																
Maximum	58	60	59	56	58	59	65	66	65	64	62	62	60	58	60	59	57	59	61	61	62	61	58	60	65	65	62	55	56	57	58	60
Minimum	53	54	56	54	51	56	57	60	61	59	57	56	53	54	56	55	53	53	54	54	56	58	55	55	58	61	55	51	49	50	54	55
June																																
Maximum	60	61	61	62	60	65	67	64	65	65	65	65	63	63	62	61	61	63	64	65	66	62	63	64	64	65	68	69	65	65	--	64
Minimum	55	57	54	55	57	58	61	60	59	59	58	58	56	56	57	55	55	55	57	60	60	59	58	57	58	58	60	64	60	58	--	58
July																																
Maximum	64	63	65	66	67	62	63	64	64	65	65	66	66	69	67	64	62	62	63	62	63	65	68	70	68	65	66	64	63	62	60	65
Minimum	56	59	57	58	61	56	59	59	61	57	58	58	62	62	61	61	60	58	57	57	56	60	61	64	61	60	59	59	56	56	59	59
August																																
Maximum	59	61	58	61	64	68	68	65	63	64	63	66	69	69	69	66	65	63	63	63	61	62	62	62	60	60	62	60	58	56	56	63
Minimum	57	55	54	56	57	60	63	62	61	60	59	60	63	63	64	62	62	60	58	58	58	58	56	57	58	58	58	56	52	55	54	59
September																																
Maximum	57	59	60	61	63	60	57	59	59	61	58	58	60	59	58	55	56	60	63	62	63	62	58	57	55	54	50	50	54	55	--	58
Minimum	54	53	56	57	60	56	56	55	58	58	54	54	56	57	55	53	53	56	58	61	61	58	56	54	52	50	48	49	50	54	--	55

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

4-1270. BOARDMAN RIVER NEAR MAYFIELD, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 25 feet downstream from Browns Bridge, 300 feet downstream from East Creek, 0.9 mile downstream from Browns Bridge Dam, 1.0 mile northeast of Mayfield, Grand Traverse County, and 9.6 miles southwest of Traverse City.
DRAINAGE AREA.--223 square miles.
RECORDS AVAILABLE.--Water temperatures: June 1961 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 69°F July 5, 24, Aug. 15; minimum, 33°F Jan. 19-24, Jan. 31 to Feb. 8.
EXTREMES, 1961-65.--Water temperatures: Maximum, 73°F July 2, 1963; minimum, freezing point on many days during winter months in 1963.
REMARKS.--Flow regulated by powerplant, 0.9 mile above station.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	54	53	53	52	52	50	49	48	47	46	46	45	47	47	47	48	49	50	49	49	48	47	46	46	46	46	47	47	48	48	47	48
Minimum	53	51	52	52	50	49	48	47	46	46	45	45	45	46	46	47	48	48	49	48	47	46	45	45	45	45	46	47	47	47	47	47
November																																
Maximum	47	47	48	49	48	48	48	48	48	48	48	49	49	49	48	48	47	46	45	44	43	41	39	37	37	37	36	36	36	35	--	44
Minimum	46	46	47	47	48	48	48	48	48	48	48	48	49	48	48	47	46	45	44	43	41	39	37	35	37	36	35	36	35	35	--	44
December																																
Maximum	35	35	35	35	35	35	35	35	35	35	36	36	36	36	37	36	36	36	36	36	35	35	35	35	36	36	36	37	37	36	36	36
Minimum	35	35	35	35	35	35	35	35	35	35	35	36	36	36	36	36	36	36	36	35	35	35	35	35	35	36	36	36	36	36	36	35
January																																
Maximum	36	36	36	36	36	36	37	36	36	36	36	35	35	35	36	35	34	34	34	33	33	33	33	34	34	34	34	34	34	34	34	35
Minimum	36	36	36	36	36	36	36	36	36	36	35	35	34	34	34	34	34	34	33	33	33	33	33	33	34	34	34	34	34	34	33	34
February																																
Maximum	33	33	33	33	33	33	33	34	35	35	35	35	35	35	35	36	36	36	36	36	36	35	35	35	34	34	34	34	--	--	--	35
Minimum	33	33	33	33	33	33	33	33	34	35	35	35	35	35	35	35	36	36	36	36	35	35	35	34	34	34	34	34	--	--	--	34
March																																
Maximum	34	35	35	36	37	36	38	38	38	38	38	38	38	37	37	37	37	37	37	36	36	36	36	36	35	37	37	37	37	38	38	37
Minimum	34	34	35	35	36	36	36	37	38	38	38	37	37	37	37	37	36	37	36	35	35	35	34	35	35	35	36	36	36	36	36	36
April																																
Maximum	37	39	39	38	39	38	38	38	38	40	40	40	41	41	40	40	40	40	39	41	45	47	46	46	46	45	47	47	47	52	--	42
Minimum	37	37	37	37	38	38	38	38	38	38	39	40	40	40	40	40	39	39	39	39	41	43	45	45	45	44	44	45	45	46	--	40
May																																
Maximum	51	53	54	56	56	57	57	60	61	61	61	63	62	60	60	59	61	60	60	61	59	63	62	61	62	63	63	60	59	57	59	59
Minimum	50	49	50	54	54	55	55	57	59	58	60	60	59	58	57	57	59	58	58	59	57	59	61	60	59	59	59	58	57	56	57	57
June																																
Maximum	59	61	60	60	60	61	62	63	63	65	65	68	66	65	65	64	63	63	62	62	64	64	64	65	66	65	64	66	68	68	--	64
Minimum	57	58	57	58	59	56	61	61	61	63	63	63	62	62	62	61	60	61	59	60	62	62	61	55	63	64	62	61	66	66	--	61
July																																
Maximum	66	65	66	65	69	66	65	66	66	65	66	65	64	67	67	67	68	66	67	65	64	65	67	69	66	67	68	66	67	64	63	66
Minimum	63	61	63	62	63	64	64	64	63	63	64	63	61	64	64	64	66	64	63	64	63	62	64	63	65	65	65	65	63	63	59	63
August																																
Maximum	62	63	61	62	61	64	65	66	65	64	62	64	67	66	69	68	67	66	66	64	62	64	62	61	62	62	61	61	59	59	59	63
Minimum	62	61	60	60	60	60	64	65	64	62	61	61	64	64	65	67	64	65	63	62	60	62	59	61	61	61	59	59	58	59	56	62
September																																
Maximum	57	57	58	60	60	60	60	59	59	59	58	59	58	60	59	56	56	57	58	60	60	60	60	58	57	56	55	53	53	52	--	58
Minimum	55	55	56	58	55	60	57	58	55	56	57	57	56	58	55	56	56	55	55	57	56	59	57	57	55	55	53	51	52	51	--	56

STREAMS TRIBUTARY TO LAKE HURON

4-1280. STURGEON RIVER NEAR WOLVERINE, MICH.

LOCATION.--Temperature recorder at gaging station on left bank, 1.8 miles north of Wolverine, Cheboygan County, 2.8 miles downstream from West Branch, and 9 miles upstream from mouth.
DRAINAGE AREA.--170 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1958 to September 1965.
EXTREMES, 1964-65.--Water temperatutes: Maximum, 70°F June 28; minimum, freezing point on many days during December to February.
EXTREMES, 1958-65.--Water temperatures: Maximum, 75°F June 30, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Recorder stopped Dec. 12-14; range 32°F. Intermittent regulation at low flows from ponds 2.4 miles upstream.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	52	52	53	50	46	45	45	44	44	44	43	42	45	46	48	48	49	48	47	45	43	43	43	43	46	47	47	47	47	43	42	46
Minimum	49	52	50	46	45	45	44	44	44	43	41	41	42	43	45	45	45	47	45	43	43	43	42	42	42	45	45	47	43	42	42	44
November																																
Maximum	45	46	48	50	50	46	45	45	47	47	47	48	48	45	44	45	44	41	39	39	38	38	37	37	38	38	37	37	37	36	--	43
Minimum	42	44	46	48	46	44	44	44	45	46	46	47	45	43	43	44	41	39	39	38	38	37	36	36	37	37	37	37	36	36	--	41
December																																
Maximum	36	36	36	36	35	35	35	34	34	32	32	--	--	--	32	32	32	32	32	32	32	32	33	35	35	35	34	32	32	34	34	34
Minimum	36	36	36	35	35	35	34	34	32	32	32	--	--	--	32	32	32	32	32	32	32	32	32	33	35	34	32	32	32	32	34	33
January																																
Maximum	34	32	32	34	34	34	35	37	37	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33
Minimum	32	32•	32	32	34	34	34	35	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	33	33	33	32	32	34	34	34	34	33	33	33	33	33	33	33	33	33	33	--	--	--	33
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	33	33	33	33	33	33	33	33	33	33	--	--	--	32
March																																
Maximum	34	34	37	37	39	39	39	38	38	37	36	36	36	37	37	37	37	34	33	33	33	33	33	33	33	33	33	34	36	39	39	36
Minimum	33	34	34	37	37	38	37	36	36	36	36	35	35	36	34	35	34	33	33	33	33	33	33	33	33	33	33	33	34	35	35	35
April																																
Maximum	39	39	39	40	40	39	38	42	41	42	40	38	39	38	38	36	38	41	44	44	43	45	44	43	42	41	45	47	49	52	--	42
Minimum	36	35	35	36	38	38	38	38	39	37	38	34	34	35	36	35	35	36	39	40	40	40	41	39	40	40	39	41	42	47	--	38
May																																
Maximum	50	54	52	53	53	52	57	62	60	61	60	59	57	58	57	59	60	59	60	59	61	61	60	60	65	66	65	56	55	54	55	58
Minimum	47	46	50	48	47	51	50	55	57	55	54	54	51	51	54	55	53	53	54	53	53	57	54	54	56	60	56	53	51	52	52	53
June																																
Maximum	55	58	58	60	61	66	65	62	64	63	62	63	60	60	58	57	60	62	64	64	65	63	62	62	62	63	67	70	67	64	--	62
Minimum	52	52	52	53	55	59	61	57	57	57	55	57	55	54	54	54	54	54	56	58	59	58	59	56	55	56	58	64	60	59	--	56
July																																
Maximum	62	63	64	66	66	63	64	65	64	63	62	64	63	67	65	64	63	60	61	62	62	64	68	69	66	65	64	62	60	61	60	64
Minimum	57	58	59	58	61	58	58	59	60	57	57	57	60	61	59	59	60	57	56	56	56	59	61	63	60	59	59	59	57	56	58	59
August																																
Maximum	58	61	59	61	64	67	66	64	61	61	62	63	66	68	67	65	63	61	60	59	59	61	60	60	60	60	60	60	56	54	53	61
Minimum	57	56	56	55	57	60	62	61	60	58	56	61	61	61	63	59	60	58	56	56	56	58	56	56	57	58	56	56	53	52	52	58
September																																
Maximum	55	55	58	58	60	58	53	56	56	56	54	54	56	56	54	53	53	58	62	62	61	61	57	57	53	52	50	49	50	53	--	56
Minimum	52	52	53	54	58	53	53	52	53	54	51	51	52	54	53	52	51	53	57	59	58	57	55	53	51	50	48	48	49	50	--	53

STREAMS TRIBUTARY TO LAKE HURON--Continued

4-1290. PIGEON RIVER NEAR VANDERBILT, MICH.

LOCATION.--Temperature recorder at gaging station on left bank at Pigeon River Fisheries Experiment Station, 11.1 miles east of Vanderbilt, Otsego County.
DRAINAGE AREA.--63 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 76°F July 24; minimum, freezing point on many days during January to April.
EXTREMES, 1950-65.--Water temperatures: Maximum, 81°F Aug. 1, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Recorder stopped Sept. 5-14, range 52°F to 65°F. Occasional regulation by Lansing Club Dam 3.5 miles upstream.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	55	53	55	52	50	49	47	46	46	45	46	47	51	53	54	55	56	54	52	48	45	44	43	46	48	52	51	51	49	48	47	50
Minimum	50	51	50	49	48	46	44	45	44	42	42	43	46	47	50	50	51	51	48	45	43	42	41	42	43	47	48	49	46	45	43	46
November																																
Maximum	46	47	51	53	51	49	48	48	48	48	49	50	50	47	45	45	44	42	40	38	37	36	35	36	39	38	37	37	37	35	--	44
Minimum	43	44	47	49	49	46	46	45	47	47	47	47	47	45	44	44	42	40	38	36	34	34	35	35	36	37	37	36	34	34	--	42
December																																
Maximum	34	34	34	34	34	34	34	34	34	34	34	35	36	36	35	34	34	34	34	34	34	34	34	34	35	35	34	33	33	33	34	34
Minimum	34	34	34	34	34	34	34	34	34	34	34	34	35	34	34	34	34	34	34	34	34	33	33	34	34	34	33	33	33	33	33	34
January																																
Maximum	35	34	34	36	34	35	36	36	35	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33
Minimum	33	33	33	33	33	33	34	35	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	34	34	34	33	34	34	35	34	32	32	32	32	32	32	32	32	32	32	--	--	--	33
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	33	33	34	37	36	38	39	36	37	38	38	34	34	37	37	36	34	35	34	33	33	34	35	33	35	34	36	35	38	41	35
Minimum	32	32	32	32	33	33	34	32	33	32	32	32	32	32	32	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
April																																
Maximum	36	41	43	42	40	38	37	42	41	42	41	39	37	37	38	35	36	40	46	48	43	47	44	42	43	41	43	47	50	51	--	42
Minimum	33	33	32	33	35	35	36	36	37	37	37	33	33	36	35	34	34	35	38	41	41	40	40	38	40	40	39	43	44	47	--	37
May																																
Maximum	50	53	54	52	55	51	56	61	61	59	59	61	62	61	59	62	62	64	63	63	64	64	65	64	67	68	65	58	58	58	59	60
Minimum	47	46	50	49	49	50	48	54	57	56	54	54	53	53	56	57	56	56	56	56	55	58	57	56	59	62	58	51	50	51	52	54
June																																
Maximum	55	59	63	65	67	70	69	68	69	68	69	68	67	65	62	61	62	66	69	68	69	68	65	63	65	67	72	73	68	68	--	66
Minimum	54	53	54	55	56	62	64	62	62	61	60	61	59	57	57	56	56	56	59	61	62	61	61	59	58	58	60	67	63	60	--	59
July																																
Maximum	70	67	69	71	71	71	70	72	68	69	70	72	70	73	73	72	66	65	66	69	69	70	74	76	73	73	72	65	64	68	62	70
Minimum	57	60	61	61	63	61	63	62	63	61	60	61	63	65	63	64	62	60	58	58	58	63	64	66	65	63	62	61	58	56	60	61
August																																
Maximum	61	63	62	65	69	70	70	67	64	61	65	64	69	73	72	71	68	65	64	65	65	65	64	65	66	63	64	61	59	55	54	65
Minimum	58	57	54	56	58	62	65	64	61	58	59	61	62	61	65	64	63	61	59	57	58	59	58	59	59	60	59	55	54	53	53	59
September																																
Maximum	55	58	61	62	--	--	--	--	--	--	--	--	--	--	58	55	54	58	64	63	63	63	59	57	54	52	50	49	49	52	--	--
Minimum	52	52	53	56	--	--	--	--	--	--	--	--	--	--	55	52	51	54	57	61	61	58	57	52	51	49	47	47	48	49	--	--

STREAMS TRIBUTARY TO LAKE HURON--Continued

4-1355. AU SABLE RIVER AT GRAYLING, MICH.

LOCATION (revised).--Temperature recorder at gaging station on right bank, 65 feet upstream from bridge on Interstate Highway 75 (Business Loop) at Grayling, Crawford County, and 0.8 mile upstream from East Branch.
DRAINAGE AREA.--110 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1953 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 76°F July 23-25; minimum, freezing point on many days during November to March.
EXTREMES, 1953-65.--Water temperatures: Maximum, 82°F July 1, 2, 1963; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	52	52	51	51	49	46	45	42	42	42	41	43	46	48	50	51	52	52	52	48	44	41	41	41	46	48	49	50	50	48	45	47
Minimum	49	51	49	49	46	45	42	42	42	40	40	41	43	46	48	49	50	52	48	44	41	41	41	41	41	46	48	49	48	45	44	45
November																																
Maximum	45	46	50	52	52	49	47	47	49	49	49	49	49	47	44	44	44	42	38	37	34	34	34	34	34	34	34	33	33	32	--	42
Minimum	44	45	46	50	49	47	46	45	47	49	48	49	47	44	44	44	42	38	37	34	34	34	33	33	34	34	33	33	32	32	--	41
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	32	32	32	32	32	32	32	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	33	33	33	32	32	33
Minimum	32	32	32	32	32	32	32	32	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	33	33	33	32	32	32	33
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	32	33	33	33	35	35	35	34	35	35	35	35	35	35	34	33	33	33	33	33	33	33	33	33	33	33	35	35	34
Minimum	32	32	32	32	32	33	33	33	35	34	34	34	34	35	34	35	34	33	33	33	33	33	33	33	33	33	33	33	33	33	34	33
April																																
Maximum	35	35	36	36	38	38	38	41	41	45	46	46	41	43	43	43	40	44	47	51	51	51	51	47	47	44	49	52	54	58	--	44
Minimum	34	34	35	35	36	38	38	38	40	41	43	41	38	40	43	40	38	38	43	46	47	46	47	44	44	44	42	46	48	51	--	41
May																																
Maximum	58	59	59	59	61	61	64	66	66	66	65	64	64	62	62	61	61	62	62	63	63	64	65	65	66	68	68	58	56	57	57	62
Minimum	53	52	57	55	54	57	57	62	64	64	60	60	57	57	58	60	55	57	58	58	58	62	61	60	61	65	58	52	50	53	54	58
June																																
Maximum	56	59	61	62	64	69	69	67	67	67	67	67	67	65	64	62	63	66	67	67	68	68	66	66	68	68	71	73	73	69	--	66
Minimum	54	54	55	57	60	63	66	64	64	64	64	65	62	63	62	59	59	62	63	66	66	66	65	62	62	64	64	69	69	64	--	63
July																																
Maximum	68	67	67	68	69	69	68	71	71	68	68	70	71	74	74	71	69	67	64	65	68	72	76	76	76	73	72	70	65	64	64	70
Minimum	64	63	64	64	66	64	66	67	68	65	65	65	69	70	69	69	67	64	62	63	64	68	71	73	71	70	69	65	61	60	61	66
August																																
Maximum	61	60	60	64	68	72	72	71	70	66	67	69	74	75	75	75	73	69	66	65	65	65	64	66	66	64	63	63	58	58	55	66
Minimum	60	58	53	59	63	68	70	70	64	62	62	63	67	69	71	69	68	63	62	61	62	63	61	61	64	62	62	57	54	55	54	63
September																																
Maximum	58	60	63	64	65	65	60	60	60	60	58	58	60	60	58	55	54	62	64	65	65	65	60	58	53	53	49	46	47	52	--	59
Minimum	54	55	58	61	63	60	58	57	57	58	54	54	56	58	55	53	51	54	61	64	64	60	58	53	49	49	46	46	46	47	--	55

STREAMS TRIBUTARY TO LAKE HURON--Continued

4-1365. AU SABLE RIVER AT MIO, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 150 feet upstream from bridge on State Highway 33 at Mio, Oscoda County, and 10 miles downstream from Big Creek.
DRAINAGE AREA.--1,100 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: July 1952 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 72°F July 1; minimum, 35°F on many days during December to March.
EXTREMES, 1952-65.--Water temperatures: Maximum, 77°F Aug. 4, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Recorder stopped Feb. 13-15; range 35°F to 37°F. No record Sept. 21-23; temperature bulb out of water. Flow regulated at all stages by powerplant 500 feet upstream.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	55	54	54	53	52	52	51	50	49	47	46	46	47	47	48	50	52	52	51	50	50	49	48	46	46	47	48	49	49	49	50	50
Minimum	53	53	52	52	52	50	50	49	47	46	45	44	45	46	46	48	49	50	50	50	48	48	46	45	44	45	46	47	48	48	48	48
November																																
Maximum	50	49	48	50	49	49	50	50	50	50	48	48	48	48	48	47	46	45	43	42	41	39	38	38	38	37	38	38	38	37	--	45
Minimum	49	48	47	47	48	48	49	49	49	48	47	47	47	47	47	46	45	43	42	41	39	37	36	36	36	36	36	36	36	36	--	43
December																																
Maximum	38	38	37	37	37	37	37	37	37	37	37	37	37	36	37	37	37	37	37	37	37	37	37	36	37	36	37	38	38	38	37	37
Minimum	37	36	36	36	36	36	36	36	36	35	35	35	35	36	36	36	36	36	36	36	36	35	35	35	35	35	36	37	37	36	36	36
January																																
Maximum	37	36	37	38	37	37	38	37	38	38	39	39	38	38	38	38	37	38	37	37	37	37	37	37	38	37	37	38	37	38	37	37
Minimum	36	35	36	36	36	36	36	36	37	38	38	38	38	38	38	37	37	37	37	37	37	37	37	36	37	36	37	37	37	37	36	37
February																																
Maximum	36	37	37	37	37	36	37	36	37	36	36	36	--	--	--	38	38	38	38	38	38	38	38	37	37	37	38	38	--	--	--	37
Minimum	36	36	36	36	36	36	36	35	35	35	35	35	--	--	--	36	36	36	37	37	37	37	37	37	37	37	37	37	--	--	--	36
March																																
Maximum	37	38	37	38	38	38	39	40	40	40	40	40	39	38	38	38	38	38	38	38	37	37	37	37	37	37	37	37	37	38	39	38
Minimum	36	36	37	36	36	36	38	39	39	38	38	38	37	37	37	37	36	37	36	36	36	36	35	35	35	35	35	36	36	36	36	36
April																																
Maximum	38	40	40	41	41	40	40	42	41	43	43	42	41	41	41	39	39	39	40	44	45	46	46	46	45	44	44	46	47	51	--	42
Minimum	37	37	38	39	39	39	40	40	41	41	41	41	40	40	39	38	38	38	39	40	43	45	45	45	44	44	43	43	44	47	--	41
May																																
Maximum	50	53	55	54	55	54	57	59	60	63	62	61	60	60	59	59	59	60	60	59	61	61	62	62	65	65	63	61	60	59	56	59
Minimum	48	49	52	52	53	53	53	54	57	59	60	59	57	57	57	57	57	56	57	57	57	58	59	59	60	61	60	58	57	56	53	56
June																																
Maximum	54	55	56	58	62	64	64	66	68	68	69	69	67	67	65	64	65	65	67	68	68	68	68	68	67	67	70	71	70	70	--	66
Minimum	53	53	53	55	56	59	61	61	63	64	64	65	64	64	63	62	62	62	62	63	65	65	66	65	65	64	63	67	67	67	--	62
July																																
Maximum	72	70	70	70	69	69	69	71	69	70	70	71	71	71	71	70	69	69	68	68	67	68	68	71	71	71	71	70	68	68	65	70
Minimum	67	68	67	66	67	66	66	66	66	66	66	66	66	68	67	68	67	66	65	64	63	64	65	65	67	67	67	67	66	65	63	66
August																																
Maximum	65	64	64	63	66	69	68	66	67	68	68	66	66	71	71	70	71	70	69	68	67	66	65	66	64	63	64	62	60	59	58	66
Minimum	63	62	61	60	60	62	64	64	65	65	64	64	63	64	66	66	67	67	67	64	64	63	61	62	62	60	60	59	57	56	56	63
September																																
Maximum	59	59	60	59	62	60	61	61	61	61	59	59	61	60	59	57	59	60	62	59	--	--	--	63	61	58	55	54	54	53	--	59
Minimum	55	55	56	56	57	59	59	59	59	58	57	57	58	57	57	56	57	57	57	57	--	--	--	61	57	55	53	53	52	52	--	57

STREAMS TRIBUTARY TO LAKE HURON--Continued

4-1380. EAST BRANCH AU GRES RIVER AT McIVOR, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 25 feet downstream from highway bridge at McIvor, Iosco County, 1.1 miles east of National City, and 9 miles southwest of Tawas City.
DRAINAGE AREA.--84 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1951 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 75°F July 14; minimum, freezing point on many days during November to March.
EXTREMES, 1951-65.--Water temperatures: Maximum, 79°F June 30, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Complete ice cover during winter months. Some intermittent regulation at low and medium flow by dam 2.5 miles upstream.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	52	52	52	52	51	47	45	44	45	45	45	44	48	48	50	50	50	50	50	46	43	43	43	43	46	48	49	52	52	49	44	48
Minimum	47	51	49	50	47	45	40	42	44	42	39	42	44	45	47	47	47	49	46	42	43	42	40	40	42	45	48	49	49	43	42	45
November																																
Maximum	45	48	50	50	50	49	47	47	46	47	49	49	49	48	43	44	44	41	39	38	35	34	33	33	33	33	33	37	37	32	--	42
Minimum	43	45	48	50	49	45	45	44	45	46	47	48	48	43	41	41	41	39	38	35	34	33	33	33	33	32	33	33	32	32	--	40
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	33	32	32	32	32	32	32	34	34	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	32
February																																
Maximum	33	33	33	33	33	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	33	33	33	33	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	32	32	32	32	32	32	32	33	33	34	34	35	37	37	33	33	33	33	33	33	33	33	33	34	34	34	41	40	34
Minimum	32	32	32	32	32	32	32	32	32	32	32	33	32	34	33	35	33	33	33	33	33	33	33	33	33	33	33	34	34	34	35	33
April																																
Maximum	40	40	42	41	43	42	39	39	37	37	38	38	39	39	39	39	39	41	43	45	45	46	46	44	44	41	46	47	49	52	--	42
Minimum	36	34	34	35	38	39	38	36	35	35	37	37	37	39	39	39	37	38	39	41	41	41	42	40	41	41	40	42	43	48	--	39
May																																
Maximum	51	53	57	56	53	53	51	59	59	63	63	61	60	58	58	59	59	59	60	59	59	62	60	57	63	63	63	59	53	55	55	58
Minimum	47	45	51	49	46	49	47	51	56	59	59	56	55	52	56	56	55	52	56	52	52	57	55	53	55	61	59	53	49	49	53	53
June																																
Maximum	53	55	56	58	60	64	64	63	66	64	62	65	63	61	60	60	61	62	67	68	70	68	67	65	65	64	70	74	73	70	--	64
Minimum	52	52	50	51	53	59	62	57	60	59	57	58	57	56	56	55	56	56	58	61	65	61	63	59	57	57	61	68	66	63	--	58
July																																
Maximum	68	66	66	69	71	67	66	70	69	68	68	70	72	75	73	71	66	64	63	64	66	69	70	74	73	72	71	69	66	65	65	69
Minimum	60	62	61	61	66	60	63	62	66	61	61	62	66	70	67	64	63	61	59	56	58	64	67	67	66	65	64	64	61	58	62	63
August																																
Maximum	64	64	62	66	67	72	72	71	70	66	65	69	71	73	73	72	70	66	65	65	63	64	64	63	63	62	65	65	58	57	56	66
Minimum	62	61	57	59	63	64	69	67	66	63	59	62	66	66	68	66	66	63	62	59	59	61	58	58	61	61	60	58	54	55	56	62
September																																
Maximum	58	58	60	62	62	62	58	60	60	61	60	57	59	59	58	57	55	59	62	62	62	62	61	59	55	53	51	49	50	53	--	58
Minimum	56	54	55	57	61	58	56	58	58	59	56	54	56	58	57	55	54	54	59	61	61	61	59	55	52	51	47	49	49	50	--	56

STREAMS TRIBUTARY TO LAKE HURON--Continued

4-1390. HOUGHTON CREEK NEAR LUPTON, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 0.5 mile upstream from mouth, 3 miles downstream from Wilkins Creek, and 3 miles southwest of Lupton, Ogemaw County.
DRAINAGE AREA.--27 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: July 1950 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 66°F June 28, July 14, 24; minimum, freezing point on many days during December to February.
EXTREMES, 1950-65.--Water temperatures: Maximum, 69°F June 25, 1952; minimum, freezing point on many days during winter months.
REMARKS.--Recorder stopped Nov. 21 to Dec. 2, Dec. 18 to Feb. 15, Feb. 20 to Mar. 24; range 32°F to 37°F, 32°F to 38°F, 33°F to 35°F, respectively. Records for June 2-8 lost.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	50	50	51	50	46	45	43	45	45	42	42	44	47	48	50	50	50	50	49	46	44	44	44	44	48	50	50	51	51	46	45	47
Minimum	46	49	48	46	44	42	40	43	43	41	39	42	44	45	46	46	46	48	46	44	43	43	42	42	43	48	47	49	46	43	43	44
November																																
Maximum	46	49	51	51	51	49	48	47	49	49	49	48	48	46	44	46	45	43	41	40	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	44	46	49	50	49	45	46	45	47	48	48	47	46	43	43	44	43	41	40	36	--	--	--	--	--	--	--	--	--	--	--	--
December																																
Maximum	--	--	33	33	32	32	32	32	32	35	36	36	36	34	32	34	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	33	32	32	32	32	32	32	32	35	36	34	32	32	32	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
January																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
February																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	36	35	35	34	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	34	33	33	33	--	--	--	--	--	--	--	--	--	--	--	--	--
March																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	36	38	37	39	39	40	40	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	33	34	33	35	36	35	35	--
April																																
Maximum	40	41	42	41	41	39	37	36	36	39	38	37	40	40	40	37	38	43	44	46	45	47	46	45	44	43	47	50	52	54	--	42
Minimum	37	35	35	35	37	37	36	34	33	33	34	33	33	35	36	35	36	37	39	41	41	41	42	40	41	42	40	43	44	48	--	38
May																																
Maximum	52	55	56	54	54	55	57	62	63	65	61	60	58	58	57	59	58	59	60	58	59	60	59	58	61	63	62	56	53	54	55	58
Minimum	47	46	51	50	47	51	50	55	58	60	55	54	52	51	54	55	53	52	55	51	52	57	55	54	55	58	56	52	49	49	53	53
June																																
Maximum	53	--	--	--	--	--	--	--	62	61	60	62	60	58	57	57	59	59	62	63	63	61	61	60	60	60	63	66	65	62	--	--
Minimum	52	--	--	--	--	--	--	--	57	57	55	56	55	54	54	52	54	55	56	58	59	57	59	56	55	54	56	61	60	58	--	--
July																																
Maximum	61	60	62	62	63	61	59	61	61	60	61	62	63	66	64	62	60	58	57	58	60	63	64	66	65	63	62	60	58	57	57	61
Minimum	55	56	56	56	59	55	56	56	58	56	56	56	59	61	60	58	57	55	54	53	54	58	61	61	60	59	58	57	55	53	55	57
August																																
Maximum	56	56	55	57	60	64	64	61	60	60	59	62	63	64	65	63	61	60	59	58	57	58	57	57	57	56	58	58	53	53	52	59
Minimum	55	54	52	53	56	58	61	59	58	57	54	57	59	59	61	60	59	58	56	54	55	56	54	54	56	55	55	53	50	51	52	56
September																																
Maximum	54	55	56	57	60	59	55	56	56	58	57	54	57	57	56	54	52	56	59	59	60	60	58	55	51	51	48	48	49	52	--	55
Minimum	52	51	53	54	57	54	53	54	54	56	52	51	53	56	54	51	50	52	56	58	59	58	55	51	49	48	45	47	48	49	--	53

STREAMS TRIBUTARY TO LAKE HURON--Continued

4-1395. RIFLE RIVER AT "THE RANCH", NEAR LUPTON, MICH.

LOCATION.--Temperature recorder at gaging station on left bank, 0.2 mile downstream from Houghton Creek, and 3 miles southwest of Lupton, Ogemaw County.
DRAINAGE AREA.--54 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: July 1950 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 70°F June 28, July 14; minimum, freezing point on many days during November to February.
EXTREMES, 1950-65.--Water temperatures: Maximum, 72°F June 25, 26, 1952, July 5, 6, 9, Aug. 1, 1955, June 30, 1964; minimum, freezing point on many days during winter months.
REMARKS.--Occasional regulation by dams above station.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	51	51	51	51	50	48	45	46	46	45	44	45	47	48	50	50	50	51	51	47	45	45	45	45	47	49	49	51	52	50	46	48
Minimum	49	51	49	50	48	45	43	44	45	43	42	43	45	46	48	49	49	50	47	45	44	45	44	44	45	47	48	49	50	46	45	46
November																																
Maximum	47	48	50	50	51	51	48	48	49	49	50	49	48	47	44	46	46	43	41	40	37	35	35	36	36	36	36	36	35	33	--	43
Minimum	46	47	48	50	50	48	48	47	47	49	49	47	47	44	43	44	43	41	40	37	35	34	33	35	35	35	35	35	33	32	--	42
December																																
Maximum	32	32	33	33	33	33	32	32	32	32	33	34	34	34	33	32	32	32	32	32	32	32	33	34	34	34	34	32	32	33	33	33
Minimum	32	32	32	33	33	32	32	32	32	32	32	33	34	33	32	32	32	32	32	32	32	32	32	33	34	34	32	32	32	32	33	32
January																																
Maximum	33	33	32	32	33	33	33	34	34	33	32	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32	32	32	33	33	33	33
Minimum	33	32	32	32	32	33	33	33	33	32	32	32	33	33	33	33	33	33	33	32	32	32	32	32	32	32	32	32	32	33	33	32
February																																
Maximum	33	33	33	33	33	32	33	33	33	33	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	34	34	34	--	--	--	33
Minimum	33	33	33	33	32	32	32	33	33	33	33	33	33	33	33	33	33	33	34	34	34	34	34	33	34	34	34	34	--	--	--	33
March																																
Maximum	35	36	36	37	37	34	36	36	36	36	36	37	37	37	38	39	38	36	36	35	35	35	36	36	36	37	37	38	38	39	39	37
Minimum	34	35	36	36	34	34	34	35	34	35	35	35	36	37	36	38	35	35	35	35	35	35	35	35	35	36	36	36	37	37	37	35
April																																
Maximum	39	39	40	40	41	41	39	38	38	39	39	38	39	39	39	38	38	41	44	46	45	48	47	45	44	43	46	49	50	53	--	42
Minimum	38	37	38	38	39	39	38	38	35	35	36	35	35	37	38	37	37	37	40	42	42	42	43	41	42	42	40	43	45	47	--	39
May																																
Maximum	52	55	57	56	56	56	57	60	62	62	61	61	61	61	60	61	59	61	61	61	61	63	62	60	63	65	63	55	54	57	55	59
Minimum	48	47	53	52	50	52	52	56	59	59	57	57	55	54	57	58	55	54	57	55	54	58	57	56	57	60	55	51	48	48	52	54
June																																
Maximum	54	58	59	60	61	65	63	63	65	65	63	66	62	61	59	59	61	61	65	65	66	63	62	63	64	63	68	70	67	66	--	63
Minimum	52	52	51	52	53	58	60	56	59	58	57	58	55	54	54	53	54	55	55	58	60	57	60	56	55	55	58	64	62	59	--	56
July																																
Maximum	64	62	65	65	67	63	62	65	63	65	66	66	67	70	67	64	61	60	60	61	63	66	67	69	66	66	64	62	60	61	60	64
Minimum	57	58	57	57	60	56	58	58	60	58	58	59	61	64	61	59	58	56	55	53	55	59	62	62	61	59	58	58	56	54	57	58
August																																
Maximum	59	59	58	61	64	69	66	64	63	64	63	65	68	69	69	66	64	62	62	61	61	61	60	60	59	58	61	60	56	55	55	62
Minimum	57	56	53	55	58	60	63	61	61	59	56	59	61	61	63	61	61	60	58	55	56	58	54	55	57	57	56	55	51	52	54	58
September																																
Maximum	57	57	59	60	63	61	58	60	58	60	58	57	59	58	56	55	53	59	63	62	63	63	60	58	54	54	50	50	52	55	--	58
Minimum	53	52	54	55	60	56	55	56	56	58	52	51	54	56	55	52	52	53	58	60	61	60	58	54	51	50	46	49	50	52	--	54

STREAMS TRIBUTARY TO LAKE HURON--Continued

4-1400. PRIOR CREEK NEAR SELKIRK, MICH.

LOCATION.--Temperature recorder at gaging station on right bank, 0.2 mile upstream from mouth, 0.5 mile downstream from Ammond Creek, and 1.5 miles north of Selkirk, Ogemaw County.
DRAINAE AREA.--19 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1965.
EXTREMES, 1964-1965.--Water temperatures: Maximum, 70°F June 26, July 24; minimum, freezing point on many days during November to Febuary.
EXTREMES, 1950-65.--Water temperatures: Maximum, 76°F Aug. 1, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Complete ice cover during winter months. Recorder stopped Oct. 15-30, Dec. 18 to Jan. 13, Jan. 26 to Feb. 17; range 38°F to 51°F, 32°F to 35°F, 32°F, respectively.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	52	50	51	50	47	45	41	43	43	42	40	42	46	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	43	--
Minimum	45	48	46	47	43	41	37	41	42	39	35	38	41	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	38	--
November																																
Maximum	44	46	50	50	50	47	46	45	48	48	49	49	48	45	42	45	44	41	39	37	34	34	34	33	33	33	33	36	35	33	--	42
Minimum	41	43	46	48	47	42	44	42	45	47	47	46	45	41	40	42	40	39	37	34	34	34	33	33	33	32	33	33	33	33	--	40
December																																
Maximum	34	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
January																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	--	--	--	--
February																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	33	33	33	34	34	34	34	34	34	34	34	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	33	33	33	33	34	34	34	34	34	34	34	--	--	--	--
March																																
Maximum	34	34	34	34	34	33	33	33	33	33	33	33	33	33	33	37	36	34	34	34	34	34	34	34	34	34	34	34	34	35	37	34
Minimum	34	34	34	34	33	33	33	33	33	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
April																																
Maximum	37	39	38	38	40	36	35	35	34	34	35	35	39	38	38	38	37	40	42	46	44	45	45	43	43	42	44	47	48	50	--	40
Minimum	34	34	34	34	35	35	35	34	34	34	34	35	34	36	37	37	37	37	39	44	41	42	43	41	42	42	40	43	44	48	--	38
May																																
Maximum	50	52	56	55	54	54	58	62	65	65	63	58	58	56	56	57	57	61	62	60	61	62	59	58	64	65	65	56	52	54	54	58
Minimum	48	47	52	51	48	52	52	56	57	60	56	56	54	52	55	55	54	53	56	52	51	58	55	54	55	60	56	51	48	48	52	53
June																																
Maximum	53	55	56	56	58	64	64	62	63	62	60	63	60	58	57	56	59	59	63	65	65	63	62	61	60	60	65	70	68	64	--	61
Minimum	52	52	49	50	52	58	61	56	59	58	55	57	55	54	54	52	54	55	56	58	61	57	61	57	55	54	57	65	62	60	--	56
July																																
Maximum	62	61	64	64	65	62	61	64	63	61	62	63	66	69	66	63	61	60	58	58	60	65	67	70	67	65	63	62	60	59	59	63
Minimum	55	57	59	57	61	55	58	59	61	57	56	57	62	66	61	59	59	57	54	52	54	60	64	64	61	60	58	59	57	53	57	58
August																																
Maximum	59	59	57	60	63	68	67	66	64	61	60	64	67	69	69	67	65	64	62	60	60	61	59	59	60	60	63	62	55	55	55	62
Minimum	58	56	52	55	58	61	65	63	61	59	55	59	63	62	65	62	63	62	60	55	56	59	54	54	59	59	59	54	51	52	54	58
September																																
Maximum	57	57	59	60	63	62	58	59	59	61	59	55	58	58	56	55	54	59	63	63	64	64	61	58	53	52	48	48	50	54	--	58
Minimum	55	53	55	56	60	57	56	57	57	59	53	51	54	56	55	52	52	54	59	62	63	61	58	53	50	48	44	45	48	50	--	54

STREAMS TRIBUTARY TO LAKE HURON--Continued

4-1405. RIFLE RIVER AT SELKIRK, MICH.

LOCATION.--Temperature recorder at gaging station on left bank, at highway bridge at Selkirk, Ogemaw County, 1.5 miles downstream from Prior Creek.
DRAINAGE AREA.--110 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1950 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 73°F June 28, July 14; minimum, freezing point on many days during November to March.
EXTREMES, 1950-65.--Water temperatures: Maximum, 78°F Aug. 1, 1955; minimum freezing point on many days during winter months.
REMARKS.--Some regulation from dams above station.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	52	51	52	51	49	45	43	45	43	43	41	43	47	48	49	49	50	50	48	44	43	42	42	43	46	49	49	51	50	46	44	47
Minimum	47	50	48	49	45	43	40	43	43	41	37	40	43	44	45	46	46	48	44	42	42	41	40	40	42	46	46	49	46	42	41	44
November																																
Maximum	45	46	50	51	51	49	47	46	48	48	49	49	48	47	43	45	44	42	40	38	35	34	33	36	36	35	35	37	36	33	--	43
Minimum	43	44	46	50	49	43	46	44	46	48	48	48	47	43	41	42	42	40	38	35	34	33	33	33	35	34	34	35	33	32	--	41
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	33	33	32	32	32	32	32	32	32	32	32	33	33	34	34	32	32	34	34	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	32	32	32	32	34	32
January																																
Maximum	34	33	32	32	33	33	34	36	35	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	33	32	32	32	32	33	33	34	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	33	33	33	33	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	33	33	32	32	--	--	--	32
March																																
Maximum	32	32	32	33	33	33	34	35	35	35	36	37	37	36	37	39	38	34	34	34	34	34	34	34	34	37	37	39	38	40	40	35
Minimum	32	32	32	32	33	33	33	33	35	35	34	35	35	36	35	37	34	34	34	34	34	34	34	34	34	34	34	35	36	35	36	34
April																																
Maximum	40	41	41	40	41	41	38	38	37	37	37	37	40	41	40	39	38	43	45	47	46	47	47	46	46	43	46	50	52	54	--	43
Minimum	37	35	36	37	38	38	37	36	35	35	35	36	35	36	39	37	36	37	39	42	42	42	44	41	42	42	40	44	45	49	--	39
May																																
Maximum	54	54	57	55	55	54	56	61	63	65	64	62	61	60	60	63	60	62	65	64	64	66	64	62	66	68	67	60	56	58	57	61
Minimum	49	47	52	50	49	51	51	55	58	60	57	56	55	53	57	57	55	54	57	56	56	60	59	58	59	63	60	54	51	51	55	55
June																																
Maximum	56	59	61	62	63	68	67	65	68	67	66	67	64	64	61	61	64	63	67	68	69	66	65	64	65	65	68	73	70	69	--	65
Minimum	54	55	53	54	56	61	64	59	61	61	59	60	58	57	57	55	57	58	58	62	63	61	63	59	58	58	60	67	65	62	--	59
July																																
Maximum	68	65	67	68	69	66	64	68	67	66	67	68	70	73	70	68	64	62	62	63	65	68	70	72	69	68	66	64	62	63	61	67
Minimum	58	60	60	60	63	58	61	61	63	60	60	61	65	68	65	63	61	59	57	56	57	63	66	65	63	62	61	61	58	56	59	61
August																																
Maximum	60	60	60	63	65	69	68	67	65	64	64	66	69	71	72	70	67	66	64	62	62	63	62	62	62	60	63	62	57	56	55	64
Minimum	58	57	54	56	59	62	66	64	62	60	58	62	64	65	67	64	65	63	60	58	58	60	56	57	60	59	59	57	53	54	55	60
September																																
Maximum	58	58	60	61	63	62	58	60	59	61	60	58	60	59	57	56	53	58	63	63	63	63	61	58	53	53	49	49	50	54	--	58
Minimum	55	54	55	57	61	58	57	57	57	59	55	54	56	57	56	53	53	53	58	62	62	61	58	53	51	49	46	47	49	50	--	55

STREAMS TRIBUTARY TO LAKE HURON--Continued

4-1440. SHIAWASSEE RIVER AT BYRON, MICH.

LOCATION.--Temperature recorder at gaging station on left bank at upstream side of highway bridge at Byron, Shiawassee County, 0.2 mile downstream from milldam, which is just upstream from South Branch Shiawassee River.
DRAINAGE AREA.--368 square miles.
RECORDS AVAILABLE.--Water temperatures: March 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 79°F Aug. 15, 16; minimum, freezing point Dec. 30 to Jan. 8, Jan. 28 to Mar. 3.
EXTREMES, 1962-65.--Water temperatures: Maximum, 83°F July 22, 1964; minimum, freezing point on many days during winter months.
REMARKS.--No record Jan. 15-27 and Mar. 19-30 when thermograph was not working.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	59	59	58	58	56	51	50	49	49	47	46	45	47	49	50	51	52	52	49	46	43	43	43	43	45	47	47	49	49	48	46	49
Minimum	55	58	55	55	54	50	47	49	47	45	43	43	43	45	47	48	49	50	46	43	43	42	41	40	42	44	45	47	48	44	43	47
November																																
Maximum	45	48	50	51	51	49	46	49	49	49	51	51	51	49	47	48	48	45	43	40	37	34	34	34	34	34	34	36	36	34	--	44
Minimum	44	45	48	50	49	46	46	47	48	48	49	51	49	47	47	47	45	43	40	37	35	34	34	34	34	34	34	34	34	33	--	42
December																																
Maximum	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33
Minimum	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	32	33
January																																
Maximum	32	32	32	33	32	32	32	36	36	36	34	33	33	33	--	--	--	--	--	--	--	--	--	--	--	--	--	32	32	32	32	--
Minimum	32	32	32	32	32	32	32	32	36	34	33	33	33	33	--	--	--	--	--	--	--	--	--	--	--	--	--	32	32	32	32	--
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	33	33	33	33	33	33	33	33	33	34	34	36	38	38	35	--	--	--	--	--	--	--	--	--	--	--	--	41	--
Minimum	32	32	32	33	33	33	33	33	33	33	33	33	33	34	35	36	35	34	--	--	--	--	--	--	--	--	--	--	--	--	39	--
April																																
Maximum	40	39	41	40	40	39	42	42	44	46	48	49	48	48	47	46	44	43	48	50	51	53	53	52	51	48	51	55	58	58	--	47
Minimum	36	35	36	38	38	38	39	41	41	43	45	48	45	45	46	44	41	39	42	47	48	50	52	49	48	46	45	49	51	55	--	44
May																																
Maximum	58	60	65	64	64	63	70	71	71	71	68	66	66	67	66	68	67	67	68	68	70	70	69	66	71	71	70	67	61	64	65	67
Minimum	54	56	57	61	58	60	62	65	67	68	63	59	59	60	62	64	61	58	62	62	62	67	63	62	65	68	67	60	59	56	59	61
June																																
Maximum	70	69	65	66	66	71	71	73	73	73	73	73	73	71	70	68	68	67	72	73	73	74	73	72	72	72	75	78	77	74	--	72
Minimum	63	64	61	61	63	66	69	67	70	68	68	70	68	67	66	64	64	64	64	67	69	67	71	67	67	66	68	73	75	70	--	67
July																																
Maximum	72	70	73	73	73	71	70	73	73	73	74	75	75	75	73	71	70	72	71	70	72	73	77	78	77	77	75	72	69	69	69	73
Minimum	65	67	68	67	70	65	67	66	70	67	68	67	69	72	68	67	68	67	66	63	64	68	70	74	71	70	70	67	64	62	66	68
August																																
Maximum	68	68	65	68	73	76	76	73	72	69	69	72	75	78	79	79	77	74	73	71	70	71	71	71	70	71	72	72	66	66	64	72
Minimum	66	64	60	64	66	70	72	71	69	66	62	65	69	71	73	73	74	72	70	67	67	67	66	64	66	66	69	65	61	64	63	67
September																																
Maximum	67	66	67	69	72	71	69	68	69	70	69	67	68	68	67	66	66	70	72	74	74	74	70	69	62	61	53	55	59	59	--	67
Minimum	63	62	64	66	69	66	67	68	67	69	64	62	64	66	66	63	62	65	68	71	71	70	67	62	59	55	50	53	55	58	--	64

STREAMS TRIBUTARY TO LAKE ST. CLAIR

4-1609. CLINTON RIVER NEAR DRAYTON PLAINS, MICH.

LOCATION.--Temperature recorder at gaging station on left bank, 14 feet downstream from bridge on State Highway 59, 1 mile downstream from State fish hatchery, and 2.0 miles south of Drayton Plains, Oakland County.
DRAINAGE AREA.--79.5 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1961 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 80°F June 22; minimum, 33°F many days in January and February.
EXTREMES, 1961-65.--Water temperatures: Maximum, 87°F July 1, 1963, July 24, 1964; minimum, freezing point on many days during winter months in 1962 and 1963.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	63	62	61	58	55	51	53	52	49	48	50	49	54	56	57	57	58	57	51	48	47	49	49	50	53	54	54	55	54	48	50	53
Minimum	51	56	50	50	46	46	44	48	46	42	40	43	45	46	47	47	48	49	45	42	44	44	42	42	43	46	46	50	48	43	43	46
November																																
Maximum	51	54	56	56	55	50	50	52	52	53	55	54	52	50	50	52	48	44	43	40	38	38	40	41	43	43	42	44	42	37	--	48
Minimum	44	48	50	50	50	44	47	49	45	49	50	49	47	43	44	48	43	41	41	37	35	34	35	36	37	40	38	41	38	36	--	43
December																																
Maximum	38	39	40	39	39	37	37	39	36	39	38	38	38	36	35	37	37	35	36	36	36	36	36	38	38	37	36	37	37	38	37	37
Minimum	36	37	38	36	36	35	36	36	35	36	38	38	36	35	35	35	35	35	35	35	34	35	35	36	37	35	34	35	36	36	35	36
January																																
Maximum	36	35	35	37	35	36	36	41	40	35	36	36	35	34	34	34	34	34	34	34	35	35	34	35	35	36	35	34	34	34	34	35
Minimum	35	34	33	35	34	34	35	36	34	33	34	33	33	33	34	34	34	33	33	33	33	34	33	33	34	35	33	33	33	34	33	34
February																																
Maximum	34	34	34	33	34	37	36	36	35	37	36	36	36	37	38	39	39	38	38	38	38	36	38	37	36	35	39	40	--	--	--	37
Minimum	33	33	33	33	33	34	36	35	34	35	35	34	34	35	35	36	37	36	35	36	36	35	35	36	34	34	36	37	--	--	--	35
March																																
Maximum	41	40	39	38	38	39	38	38	38	39	39	40	38	37	38	40	38	38	36	37	37	38	36	37	37	37	40	40	38	41	42	38
Minimum	37	37	38	38	38	38	38	38	38	37	36	36	36	36	36	36	34	35	33	34	34	34	34	34	34	34	33	34	36	35	35	36
April																																
Maximum	38	43	44	41	41	41	47	43	45	46	46	45	44	44	42	41	40	44	47	46	47	48	49	48	46	45	49	50	51	49	--	45
Minimum	36	36	36	36	37	38	39	40	40	41	41	42	39	39	41	40	39	39	41	41	43	41	47	46	45	44	44	45	47	46	--	41
May																																
Maximum	51	54	57	53	55	56	62	64	65	65	62	65	65	65	64	67	63	68	71	72	73	69	65	69	73	71	72	65	58	66	70	64
Minimum	46	50	50	50	52	54	56	58	59	60	59	59	59	59	60	60	58	54	61	58	54	59	53	53	57	60	62	57	55	54	58	56
June																																
Maximum	72	69	68	70	69	77	71	73	72	72	75	74	73	72	71	69	69	71	74	74	75	80	75	75	76	75	76	78	77	75	--	73
Minimum	61	61	57	60	62	66	68	66	69	68	68	70	69	68	67	66	64	65	66	68	70	68	71	64	63	63	69	73	73	71	--	66
July																																
Maximum	74	75	74	75	76	72	72	78	76	76	76	77	79	75	77	76	73	75	74	72	73	74	77	78	77	77	77	75	70	73	73	75
Minimum	63	67	67	66	68	64	65	63	67	63	66	65	67	69	67	66	67	67	66	62	63	66	68	71	68	67	68	65	64	61	65	66
August																																
Maximum	69	69	68	68	74	78	78	72	72	69	70	72	74	77	78	78	75	72	72	72	71	70	70	71	71	72	72	70	65	65	62	71
Minimum	65	63	59	64	64	68	70	69	69	65	62	65	68	69	70	70	70	69	68	64	66	65	65	63	65	64	67	62	57	60	61	65
September																																
Maximum	64	65	66	66	69	69	66	66	66	67	66	64	67	67	65	64	65	68	69	69	69	69	66	66	60	60	56	57	60	60	--	65
Minimum	61	58	60	61	64	61	62	63	62	64	59	57	60	61	62	58	56	61	63	65	65	65	63	61	57	55	52	55	56	58	--	60

STREAMS TRIBUTARY TO LAKE ERIE

4-1820. ST. MARYS RIVER NEAR FORT WAYNE, IND.

LOCATION (revised).--At gaging station at highway bridge, 5 miles south of Fort Wayne, Allen County, and 10.8 miles upstream from confluence with St. Joseph River.
DRAINAGE AREA.--762 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1965.
Sediment records: May 1953 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 79°F on several days during July and August.
Sediment concentrations: Maximum daily, 374 ppm Mar. 30; minimum daily, 8 ppm Nov. 5, 6.
Sediment loads: Maximum daily, 3,400 (estimated) tons Apr. 7; minimum daily, less than 0.50 ton on several days during November.
EXTREMES, 1953-65.--Sediment concentrations: Maximum daily, 2,060 ppm Feb. 25, 1956; minimum daily, 1 ppm on many days during 1955-56, 1960-61.
Sediment loads: Maximum daily, 30,800 tons Feb. 11, 1959; minimum daily, less than 0.50 ton on many days during 1953-57, 1959-65.
REMARKS.--Flow affected by ice Dec. 12-15, 17-31, Jan. 14 to Feb. 9, 21-28. Flow sometimes regulated by Grand Lake. Some diversion from or into Wabash River basin and into Miami and Erie Canal. Sediment discharges computed from field and laboratory data supplied by Indiana Flood Control and Water Resources Commission, from October through March.

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at approximately 0900)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	69	68	69	67	66	65	63	59	57	54	52	53	54	55	56	56	57	56	57	58	57	56	55	54	55	56	54	53	55	56	55	58
November	57	58	59	58	59	60	61	62	61	63	62	63	64	63	64	63	63	62	61	57	48	42	40	38	36	34	33	32	33	34	—	53
December	33	33	32	32	32	32	32	32	32	32	32	32	33	33	33	32	32	32	32	32	33	34	33	32	33	34	35	34	33	34	34	33
January	35	36	37	37	36	37	36	37	38	37	36	37	36	35	35	34	34	34	32	32	32	33	34	35	36	36	34	32	32	32	32	35
February	32	32	32	32	32	32	33	34	35	39	40	41	40	39	40	41	40	39	39	38	38	39	38	37	36	35	34	32	—	—	—	36
March	32	32	32	32	33	34	35	35	36	37	37	36	37	38	39	39	40	39	37	36	33	33	33	33	34	34	33	35	37	37	36	35
April	35	34	34	35	36	38	39	41	45	44	45	46	46	46	45	45	46	47	49	49	50	51	52	52	51	50	49	51	50	51	—	45
May	51	52	53	54	54	54	53	53	54	54	53	54	54	56	56	57	59	58	59	60	60	61	61	62	62	63	63	63	63	64	—	57
June	64	65	65	66	66	67	68	69	69	68	69	70	71	70	70	69	70	71	71	72	73	—	—	—	—	—	—	—	—	—	—	—
July	—	73	72	73	73	72	74	74	79	74	79	78	79	79	79	72	72	73	73	72	74	72	73	73	73	74	73	74	74	73	74	74
August	74	75	—	—	—	—	—	—	—	—	—	—	78	77	79	78	78	79	79	79	78	—	—	75	—	72	70	70	69	69	70	—
September	—	70	70	71	72	72	72	—	74	70	70	69	70	71	71	69	70	70	—	72	72	72	73	74	73	73	71	70	70	69	—	71

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1820. ST. MARYS RIVER NEAR FORT WAYNE, IND.--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	14	25	1	8.0	28	1	20	41	2
2..	14	18	1	8.4	23	1	20	42	2
3..	14	19	1	8.8	18	T	20	39	2
4..	15	52	2	10	12	T	22	44	3
5..	14	49	2	11	8	T	22	40	B 2
6..	14	30	1	8.8	8	T	22	30	B 2
7..	13	28	1	11	10	T	20	20	B 1
8..	12	34	1	14	11	T	18	16	B 1
9..	14	22	1	14	11	T	21	17	B 1
10..	14	20	1	14	13	T	22	18	B 1
11..	14	19	1	18	16	1	26	20	B 1
12..	14	19	B 1	18	21	1	32	20	B 2
13..	14	20	B 1	18	24	1	38	20	B 2
14..	14	20	B 1	18	21	1	40	180	A 19
15..	14	20	B 1	19	23	1	30	230	A 19
16..	14	20	B 1	21	25	1	28	40	B 3
17..	14	19	B 1	22	26	2	26	20	B 1
18..	14	20	B 1	22	23	1	25	45	A 3
19..	12	20	B 1	22	27	2	24	19	B 1
20..	17	95	A 4	23	102	6	22	19	B 1
21..	16	95	4	22	98	6	21	19	B 1
22..	13	77	3	20	83	4	20	19	1
23..	12	87	3	18	91	4	20	18	1
24..	12	89	3	18	78	4	19	22	1
25..	11	62	2	18	62	3	27	39	3
26..	9.6	60	2	18	52	3	50	52	7
27..	8.0	54	1	18	48	2	80	19	4
28..	8.0	48	1	20	47	3	65	14	2
29..	8.0	42	1	23	52	3	48	13	2
30..	8.0	39	1	22	46	3	41	20	2
31..	8.0	34	1	--	--	--	40	22	2
Total	392.6	--	47	506.0	--	57	929	--	95

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	41	17	2	100	--	12	182	16	8
2..	141	54	21	70	--	7	486	23	30
3..	250	39	26	60	--	5	1750	20	94
4..	164	34	15	55	--	5	2970	92	S 427
5..	105	40	11	52	118	17	4230	109	1240
6..	77	44	9	52	104	15	4170	93	1050
7..	68	47	9	85	141	32	4050	82	897
8..	60	45	7	290	258	202	4110	86	954
9..	72	62	12	700	172	325	3990	105	1130
10..	88	122	29	3510	60	1520	3570	121	1170
11..	77	100	21	3690	137	1360	2750	130	965
12..	59	58	9	2910	97	762	2150	137	795
13..	53	56	8	1950	62	326	1850	119	594
14..	40	62	7	1650	30	134	1700	105	482
15..	37	68	7	1480	25	100	1520	98	402
16..	36	75	7	1120	24	73	1360	85	312
17..	33	80	7	805	24	52	1320	--	750
18..	31	88	7	575	13	20	1700	--	1200
19..	30	95	8	425	11	13	1080	--	600
20..	30	105	9	300	18	15	635	--	240
21..	31	--	2	220	17	10	455	--	140
22..	43	--	3	170	18	8	350	--	90
23..	230	--	45	140	20	8	312	--	75
24..	750	--	310	116	18	6	270	--	60
25..	920	--	430	105	15	4	270	199	145
26..	700	--	280	95	14	4	260	184	129
27..	480	--	150	90	15	4	300	190	154
28..	250	--	50	90	15	4	375	218	221
29..	190	--	35	--	--	--	1660	324	S 1620
30..	240	--	50	--	--	--	2700	374	2730
31..	190	--	35	--	--	--	1750	--	1200
Total	5516	--	1621	20905	--	5043	54275	--	19904

S Computed by subdividing day.
T Less than 0.50 ton.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1820. ST. MARYS RIVER NEAR FORT WAYNE, IND.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	1280	--	700	945		450	132	--	19
2..	1800	--	1300	735		300	112	--	14
3..	1320	--	750	545		180	97	--	12
4..	945	--	450	400		110	82	--	9
5..	770	--	320	312		75	67	--	6
6..	2420	--	2000	260		55	60	--	5
7..	3270	--	3400	210		40	78	--	8
8..	2550	--	2200	182		30	230	--	45
9..	2850	--	2700	156		25	156	--	25
10..	2970	--	2900	148		25	99	--	12
11..	2650	--	2400	132		19	82	--	9
12..	2450	--	2100	118		16	77	--	8
13..	2250	--	1800	99		12	69	--	7
14..	1560	--	1000	93		11	61	--	6
15..	1240	--	700	82		9	53	--	4
16..	1200	--	650	77		8	43	--	3
17..	1160	--	600	72		7	37	--	2
18..	1020	--	500	67		6	33	--	2
19..	805	--	350	62		6	29	--	2
20..	635	--	240	55		5	26	--	1
21..	515	--	170	49		4	25	--	1
22..	400	--	110	45		4	23	--	1
23..	400	--	110	148		25	25	--	1
24..	891	110	S 339	260		55	58	--	5
25..	2200	322	1910	224		45	54	--	4
26..	2100	289	1640	375		95	35	--	2
27..	1520	286	1170	966		470	27	--	1
28..	1240	185	619	1200		650	22	65	A 4
29..	1160	118	370	455		140	22	65	A 4
30..	1120	--	600	240		50	24	65	A 4
31..	--	--	--	164		25	--	--	--
Total	46691	--	34098	8876		2952	1941	--	226

Day	JULY			AUGUST			SEPTEMBER		
1..	26	65	A 5	18	--	1	18	85	4
2..	26	65	A 5	20	80	A 4	28	95	7
3..	30	65	A 5	20	80	A 4	24	76	5
4..	25	65	A 4	22	80	A 5	23	78	5
5..	22	65	A 4	24	80	A 5	24	70	5
6..	22	65	A 4	24	80	A 5	29	63	5
7..	154	--	25	22	80	A 5	28	67	5
8..	134	--	19	21	80	A 5	26	58	4
9..	61	--	6	23	80	A 5	23	48	3
10..	47	--	4	25	80	A 5	20	36	2
11..	38	--	3	26	80	A 6	18	25	1
12..	30	--	2	23	80	A 5	17	18	1
13..	24	--	1	20	80	A 4	16	22	1
14..	24	--	1	18	80	A 4	18	22	1
15..	23	--	1	17	80	A 4	26	61	4
16..	22	--	1	16	80	A 3	77	82	17
17..	34	--	2	18	80	A 4	82	70	15
18..	38	--	3	18	80	A 4	52	47	7
19..	25	--	1	19	80	A 4	40	44	5
20..	20	--	1	20	80	A 4	33	34	3
21..	18	--	1	17	75	A 3	30	19	2
22..	18	--	1	15	75	A 3	35	27	3
23..	21	--	1	14	75	A 3	37	36	4
24..	22	--	1	14	75	A 3	39	40	4
25..	20	--	1	16	80	A 3	38	34	3
26..	19	--	1	19	85	A 4	30	45	4
27..	19	--	1	20	85	A 5	24	55	4
28..	20	--	1	18	85	A 4	22	60	4
29..	20	--	1	17	85	A 4	21	62	4
30..	18	--	1	16	85	A 4	22	61	4
31..	18	--	1	16	85	4	--	--	--
Total	1038	--	108	596	--	126	920	--	136

Total discharge for year (cfs-days)....................142585.6
Total load for year (tons)....................64413

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1935. MAUMEE RIVER AT WATERVILLE, OHIO

LOCATION.--At gaging station at bridge on State Highway 64 at Waterville, Lucas County, 3 miles downstream from Tontogany Creek. Monitor located in water treatment plant about 1,5C0 feet upstream from bridge.

DRAINAGE AREA.--6,329 square miles.

RECORDS AVAILABLE.--Chemical analyses: March 1950 to February 1952, May 1963 to Septemter 1965.
Water temperatures: March 1950 to September 1965.
Sediment records: April 1950 to September 1965.

EXTREMES, 1964-65.--Specific conductance: Maximum daily, 1,150 micromhos Dec. 19; minimum daily, 320 micromhos Feb. 13, 14, Mar. 7, 9.
pH: Maximum, 11.4 Jan. 16; minimum, 5.4 May 22.
Dissolved oxygen: Maximum, 15.0 ppm on many days during November to February; minimum, 0.8 ppm Aug. 28.
Water temperatures: Maximum, 91°F Aug. 16; minimum, 33°F Jan. 31 to Feb. 11, Feb. 24 to Mar. 5.
Sediment concentrations: Maximum daily, 1,110 ppm Feb. 11; minimum daily, 4 ppm on several daye during October and November.
Sediment loads: Maximum daily, 108,000 tons Feb. 11; minimum daily, less than 0.50 ton Oct. 23,24.

EXTREMES, 1950-65.--Specific conductance (1950-52, 1963-65): Maximum daily, 1,150 micromhos Dec. 19, 1964; minimum daily, 213 micromhos Jan. 30, 1952.
Water temperatures: Maximum, 94°F July 1, 1963; minimum, freezing point on many days during winter months.
Sediment concentrations: Maximum daily, 2,240 ppm Mar. 26, 1954; minimum daily, 1 ppm on many days during 1953, 1955, 1956, and 1963.
Sediment loads: Maximum daily, 208,000 tons Feb. 12, 1959; minimum daily, less than 0.50 ton on several days during 1953, 1955, and 1964.

REMARKS.--Flow affected by ice Dec. 7, 19, 20, Jan. 24, Feb. 24-28. Low flow slightly regulated by powerplants above station.

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965

Day	OCTOBER								NOVEMBER							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	710	680	9.1	9.0	10.3	6.0	69	55	--	--	--	--	--	--	--	--
2..	700	680	9.1	8.9	10.0	6.3	69	60	--	--	--	--	--	--	--	--
3..	720	690	9.1	8.8	10.6	6.8	68	56	--	--	--	--	--	--	--	--
4..	760	660	9.4	8.8	10.8	6.8	64	56	830	760	9.0	9.0	10.5	6.3	63	--
5..	730	700	9.1	8.9	11.5	8.2	60	54	820	740	9.3	8.9	10.2	6.1	60	53
6..	750	690	9.1	9.0	11.6	7.8	60	50	830	750	9.3	9.1	12.0	7.4	53	49
7..	750	690	9.2	9.1	12.0	8.0	60	48	810	760	9.3	9.1	12.8	8.4	52	50
8..	740	710	9.5	9.0	10.8	8.0	56	52	810	750	9.1	9.0	13.4	8.0	58	52
9..	750	710	9.2	8.9	11.4	8.2	54	49	810	720	9.0	9.0	13.8	8.2	58	48
10..	756	730	9.4	9.1	11.8	8.7	56	46	840	760	9.0	8.8	13.6	7.8	58	50
11..	770	730	9.4	9.1	12.3	9.2	57	43	--	--	--	--	--	--	--	--
12..	775	730	9.1	9.0	12.6	7.9	58	45	--	--	--	--	--	--	--	--
13..	775	750	9.1	8.9	11.6	7.5	62	48	--	--	--	--	--	--	--	--
14..	790	760	9.1	8.9	11.6	7.3	63	50	850	840	9.1	8.9	13.6	8.4	56	51
15..	810	750	9.0	8.9	11.6	7.3	64	51	860	820	8.9	8.9	13.7	7.9	57	46
16..	770	750	9.0	8.8	11.6	7.5	62	51	860	830	9.1	8.8	11.4	7.6	59	52
17..	770	750	9.0	8.8	11.6	7.3	65	51	880	830	9.1	9.0	13.6	8.9	52	46
18..	775	750	9.0	8.8	10.8	7.5	60	54	850	820	9.2	9.0	14.4	10.1	51	46
19..	865	750	9.1	8.8	11.6	8.5	57	50	850	800	9.3	9.0	13.4	9.7	48	42
20..	830	760	9.1	9.0	12.0	8.7	56	45	850	800	9.4	9.1	13.6	10.5	44	38
21..	800	750	9.1	9.0	11.7	8.8	54	48	850	790	9.6	9.2	15.0	11.8	39	34
22..	840	770	9.0	8.9	12.0	8.6	56	47	900	800	9.6	9.3	15.0	13.5	39	34
23..	860	770	9.0	8.7	12.9	8.6	56	48	900	770	9.5	9.2	15.0	13.5	36	34
24..	850	760	9.1	9.0	12.8	8.3	56	42	840	800	9.4	9.2	15.0	13.2	39	34
25..	870	790	9.1	9.0	12.2	8.0	58	45	920	820	9.4	9.2	14.7	12.6	39	36
26..	870	770	9.0	9.0	12.0	7.3	62	49	850	810	9.3	9.2	14.9	12.3	45	37
27..	860	820	9.0	8.9	11.9	7.2	61	52	920	810	9.3	9.1	15.0	11.4	44	38
28..	880	820	9.0	8.8	11.4	7.5	63	53	920	830	9.3	9.0	13.2	10.9	47	44
29..	850	770	9.5	9.3	13.5	12.0	40	36	--	--	--	--	--	--	--	--
30..	--	--	--	--	--	--	--	--	860	760	9.5	9.1	14.8	12.3	40	35
31..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1935. MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965--Continued

Day	DECEMBER								JANUARY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	900	790	9.5	9.2	15.0	12.3	38	34	920	810	9.4	9.0	15.0	12.8	39	35
2..	860	800	9.3	8.9	15.0	12.3	39	34	900	820	9.2	9.0	15.0	12.7	39	38
3..	860	830	9.3	8.9	15.0	12.3	38	35	920	840	9.2	9.1	15.0	13.0	39	36
4..	880	830	9.2	9.0	15.0	13.0	39	36	1000	900	9.3	9.1	15.0	14.2	38	36
5..	860	830	9.4	9.1	15.0	13.3	40	35	1030	960	9.2	9.0	15.0	12.6	38	36
6..	860	820	9.5	9.2	15.0	13.4	38	34	1010	920	9.1	8.9	15.0	12.0	39	36
7..	890	840	9.6	9.1	15.0	13.8	37	34	1030	940	8.8	7.1	14.7	12.0	40	38
8..	880	860	9.7	9.2	15.0	13.2	36	34	1030	930	9.0	7.0	13.5	10.2	46	42
9..	930	870	9.5	9.2	15.0	10.6	36	34	1030	940	9.4	7.9	12.5	10.0	44	41
10..	890	820	9.6	9.0	12.4	10.5	37	34	970	920	9.1	8.9	12.2	10.5	42	38
11..	870	810	9.8	9.1	11.4	9.8	39	36	1060	990	9.1	9.0	12.7	11.3	38	36
12..	910	840	9.7	9.1	11.9	10.0	44	37	1020	960	9.1	8.8	12.9	11.3	39	36
13..	900	860	9.5	9.1	10.8	9.4	40	36	1050	960	9.1	8.8	13.3	11.3	38	34
14..	890	860	9.4	9.1	11.6	10.2	39	34	1010	950	9.1	8.7	13.4	11.2	37	34
15..	920	870	9.5	9.0	12.7	10.7	38	34	1020	940	9.2	8.8	11.5	10.5	36	34
16..	950	870	9.2	9.1	13.3	11.4	39	34	1000	910	11.4	8.8	15.0	9.8	36	34
17..	1100	950	9.4	9.0	13.8	10.2	39	34	1010	940	8.9	8.3	15.0	12.9	36	34
18..	1140	1040	9.3	8.9	15.0	11.2	38	34	980	910	8.7	8.3	15.0	12.1	35	34
19..	1150	990	9.3	8.9	15.0	12.8	38	34	980	900	8.8	8.5	15.0	12.0	36	34
20..	1010	950	9.3	8.9	14.6	12.4	38	34	950	870	8.9	8.4	14.3	11.5	35	34
21..	1040	1000	9.4	9.0	15.0	12.0	38	34	960	910	8.8	8.4	15.0	11.1	35	34
22..	1070	980	9.5	9.2	14.4	11.5	38	34	930	840	8.7	8.5	13.8	10.2	35	34
23..	1010	980	9.4	9.0	14.1	11.2	39	35	870	800	8.7	8.5	13.0	11.9	35	34
24..	990	860	9.3	9.0	13.8	10.7	44	38	820	800	8.6	8.4	11.4	8.7	36	34
25..	940	870	9.2	8.9	13.8	10.6	42	38	810	740	8.5	8.3	10.0	7.6	35	34
26..	900	840	9.3	8.9	15.0	11.2	40	39	810	670	8.9	8.1	11.0	8.7	36	34
27..	930	870	9.3	9.0	15.0	12.3	40	36	680	540	9.0	8.7	10.4	6.2	35	34
28..	1010	930	9.3	9.0	15.0	12.1	40	38	540	520	8.6	8.4	12.9	3.9	36	34
29..	1080	980	9.1	8.8	15.0	12.8	40	36	580	490	8.5	6.3	13.7	12.2	35	34
30..	1060	1000	9.0	8.8	15.0	12.2	43	38	500	480	8.2	7.5	12.9	12.5	35	34
31..	1020	950	9.0	8.7	15.0	12.3	43	36	490	480	8.3	7.9	12.4	11.0	36	33

Day	FEBRUARY								MARCH							
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	550	490	8.7	8.3	12.9	10.4	40	33	600	500	9.6	9.1	11.3	10.6	34	33
2..	560	550	8.5	8.2	12.4	11.2	34	33	620	480	9.3	8.8	11.8	11.2	34	33
3..	570	550	8.5	8.2	12.9	10.5	34	33	750	510	9.7	8.7	12.0	11.2	35	33
4..	550	520	8.4	8.0	13.0	10.2	36	33	730	520	8.7	7.6	14.2	6.2	34	33
5..	570	530	8.5	8.2	12.8	7.0	34	33	580	400	7.6	7.4	14.4	9.9	36	33
6..	560	530	8.5	8.3	12.0	10.3	34	33	420	340	7.4	7.1	14.2	13.5	36	34
7..	540	510	8.6	8.4	15.0	13.2	35	33	360	320	7.4	7.2	14.0	11.2	38	36
8..	570	520	8.8	7.6	14.6	9.4	34	33	360	330	7.3	7.1	13.8	12.9	37	36
9..	610	540	9.3	8.4	11.6	8.4	35	33	360	320	11.0	7.3	13.6	12.3	38	36
10..	590	510	9.8	9.6	11.0	10.2	34	33	370	330	10.9	10.2	13.2	12.4	39	36
11..	430	400	9.8	9.0	9.7	6.2	35	33	370	330	10.7	7.0	13.9	12.4	39	37
12..	360	330	9.1	8.6	10.6	8.2	39	37	390	340	7.3	6.9	14.0	13.3	39	36
13..	350	320	9.1	8.8	14.5	8.3	40	37	410	370	7.2	7.0	13.6	12.9	39	36
14..	350	320	9.3	9.2	13.2	9.3	38	36	440	380	7.2	7.0	13.2	12.3	39	37
15..	--	--	--	--	--	--	--	--	460	410	7.2	7.0	13.8	12.3	39	37
16..	--	--	--	--	--	--	--	--	480	420	7.4	7.2	13.0	11.7	42	39
17..	--	--	--	--	--	--	--	--	490	460	7.4	7.1	12.1	11.7	42	39
18..	--	--	--	--	--	--	--	--	510	460	7.5	7.2	12.4	9.8	42	40
19..	--	--	--	--	--	--	--	--	510	450	7.7	7.5	13.5	12.8	38	36
20..	--	--	--	--	--	--	--	--	500	460	7.6	7.2	12.9	10.9	39	38
21..	--	--	--	--	--	--	--	--	510	450	7.6	7.3	12.4	7.9	42	36
22..	--	--	--	--	--	--	--	--	510	450	7.6	7.3	8.2	2.7	45	40
23..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24..	520	510	8.5	7.4	10.9	10.5	33	33	--	--	--	--	--	--	--	--
25..	520	500	7.5	6.9	10.5	9.6	34	33	--	--	--	--	--	--	--	--
26..	560	510	8.8	7.4	10.5	10.2	34	33	--	--	--	--	--	--	--	--
27..	550	480	9.2	8.2	10.6	9.9	34	33	--	--	--	--	--	--	--	--
28..	550	490	9.3	8.6	11.0	10.3	35	33	--	--	--	--	--	--	--	--
29..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31..	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1935. MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965--Continued

Day	APRIL								MAY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	--	--	--	--	--	--	--	--	500	490	9.2	8.5	6.3	4.4	58	52
2..	--	--	--	--	--	--	--	--	520	500	9.6	9.0	5.2	3.6	62	56
3..	--	--	--	--	--	--	--	--	560	520	10.0	9.2	5.6	3.1	63	57
4..	--	--	--	--	--	--	--	--	540	520	9.9	8.2	5.2	4.5	63	60
5..	--	--	--	--	--	--	--	--	560	520	9.7	8.9	5.2	4.4	63	58
6..	--	--	--	--	--	--	--	--	570	540	9.3	8.7	--	--	64	59
7..	--	--	--	--	--	--	--	--	580	490	9.0	8.6	4.6	3.2	69	61
8..	--	--	--	--	--	--	--	--	540	470	9.2	7.6	3.2	2.4	70	63
9..	--	--	--	--	--	--	--	--	560	540	7.7	7.4	3.4	2.1	72	66
10..	--	--	--	--	--	--	--	--	540	470	7.6	7.2	5.6	2.4	70	64
11..	--	--	--	--	--	--	--	--	510	460	7.5	7.2	--	--	69	64
12..	--	--	--	--	--	--	--	--	540	510	7.6	7.2	--	--	69	64
13..	--	--	--	--	--	--	--	--	560	450	7.6	6.0	--	--	70	64
14..	--	--	--	--	--	--	--	--	570	540	7.7	7.0	--	--	72	64
15..	--	--	--	--	--	--	--	--	590	540	7.8	6.9	--	--	71	64
16..	--	--	--	--	--	--	--	--	570	550	8.0	7.6	--	--	71	67
17..	--	--	--	--	--	--	--	--	640	570	8.0	6.4	--	--	68	63
18..	--	--	--	--	--	--	--	--	640	580	9.0	6.8	--	--	74	62
19..	--	--	--	--	--	--	--	--	600	570	9.3	6.7	--	--	74	66
20..	--	--	--	--	--	--	--	--	670	550	7.5	6.3	--	--	74	66
21..	--	--	--	--	--	--	--	--	660	560	7.0	6.2	--	--	76	64
22..	580	570	7.6	7.5	10.1	5.5	54	51	600	520	6.7	5.4	--	--	75	68
23..	580	550	7.5	7.2	9.9	4.6	55	51	630	530	8.7	6.1	--	--	69	64
24..	590	560	7.8	7.2	5.4	3.6	54	51	590	550	8.6	6.2	--	--	72	63
25..	590	520	7.7	7.4	5.6	4.2	51	50	630	540	6.7	6.0	--	--	75	68
26..	520	470	7.6	7.4	6.1	4.5	50	48	640	550	8.0	6.6	--	--	75	68
27..	470	430	7.5	7.3	6.3	4.9	50	48	640	560	8.1	7.9	--	--	74	68
28..	430	420	7.6	7.4	7.4	3.4	50	48	660	610	8.2	7.9	--	--	69	66
29..	460	430	7.7	7.4	6.4	5.1	53	49	680	640	8.1	7.6	--	--	65	63
30..	510	450	9.4	7.3	6.3	4.6	56	51	680	640	8.2	7.7	--	--	68	63
31..	--	--	--	--	--	--	--	--	740	660	8.2	7.5	--	--	70	64
	JUNE								JULY							
1..	800	700	9.8	7.4			72	68	500	440	8.5	7.2	--	--	82	66
2..	820	710	10.2	9.3			70	66	520	380	8.4	6.9	--	--	74	67
3..	790	660	10.0	8.2			70	64	520	370	8.3	7.1	--	--	82	69
4..	710	590	10.1	8.2			71	62	490	370	8.9	7.3	--	--	86	69
5..	630	560	10.1	8.2			74	63	500	430	8.6	7.2	--	--	83	71
6..	600	540	10.1	7.5			75	68	500	420	8.2	7.1	--	--	82	68
7..	600	520	8.4	7.1			75	68	610	440	7.6	6.8	--	--	76	69
8..	570	500	9.0	7.3			78	69	630	500	8.0	7.0	--	--	85	70
9..	560	480	9.3	6.8			78	70	620	540	7.9	7.4	--	--	81	72
10..	520	440	7.5	5.8			80	73	580	530	7.9	7.1	--	--	81	72
11..	500	430	7.0	6.2			81	72	600	570	8.0	7.2	--	--	82	72
12..	490	410	6.7	5.7			83	72	630	590	9.7	7.4	--	--	84	72
13..	510	380	8.6	5.8			80	69	650	600	9.7	8.7	--	--	82	69
14..	470	380	6.8	5.7			75	69	630	600	9.8	8.7	--	--	76	72
15..	440	360	8.1	5.7			72	66	640	590	9.5	9.3	--	--	84	69
16..	440	380	8.8	6.5			74	63	620	580	9.5	9.1	--	--	82	69
17..	540	380	8.6	7.2			75	64	640	570	9.5	9.1	--	--	82	69
18..	500	430	8.7	7.9			76	64	640	580	9.3	8.9	--	--	84	71
19..	520	400	9.2	7.2			75	64	640	580	9.5	8.9	--	--	80	69
20..	510	420	9.2	8.1			80	68	640	600	9.6	9.2	--	--	77	68
21..	530	420	9.1	7.5			80	69	730	630	9.4	9.1	--	--	82	66
22..	520	430	8.5	6.1			86	68	740	610	9.5	9.0	--	--	84	69
23..	500	460	8.4	6.0			81	72	660	630	9.3	8.8	--	--	88	74
24..	590	490	8.7	7.2			82	70	660	610	9.1	8.7	--	--	88	75
25..	650	530	8.6	6.8			80	66	660	630	9.1	8.8	--	--	87	74
26..	690	450	8.8	7.4			82	63	640	610	9.1	8.2	4.2	2.2	86	74
27..	500	420	8.7	7.5			84	68	640	620	8.5	8.0	4.2	1.8	85	76
28..	490	440	8.5	7.5			86	72	650	630	8.3	8.0	5.2	2.6	83	74
29..	490	400	8.8	7.3			87	72	660	630	8.2	7.9	6.2	2.8	80	70
30..	490	440	8.4	7.1			81	71	660	630	8.2	7.9	7.2	3.0	83	68
31..	--	--	--	--			--	--	670	620	8.4	8.0	6.9	3.0	76	68

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1935. MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965--Continued

Day	AUGUST								SEPTEMBER							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	680	600	8.3	8.0	6.8	3.4	76	69	730	640	--	--	8.4	6.9	70	65
2..	750	620	8.3	8.0	7.1	4.0	75	68	750	640	--	--	9.8	3.4	74	63
3..	790	680	8.2	8.0	7.7	2.8	80	66	690	640	--	--	8.7	7.5	74	64
4..	810	640	8.3	7.6	8.1	3.3	74	68	690	620	--	--	9.8	5.0	76	68
5..	670	610	8.1	7.8	7.6	2.6	84	68	650	620	--	--	6.7	5.2	76	69
6..	680	640	8.1	7.8	6.6	3.1	87	74	660	620	--	--	--	--	72	66
7..	700	640	7.9	7.6	6.8	2.7	78	74	660	620	--	--	--	--	76	66
8..	670	650	7.7	7.3	6.9	3.4	80	71	660	630	8.6	8.4	--	--	72	70
9..	800	660	7.5	7.2	7.0	4.0	75	70	660	630	8.5	8.0	--	--	80	69
10..	800	660	--	--	7.9	4.0	78	69	730	630	8.5	8.0	--	--	78	70
11..	680	630	8.4	8.2	8.2	4.0	83	66	760	670	8.6	8.0	--	--	70	64
12..	680	640	8.3	8.0	7.4	4.2	83	70	690	660	8.6	7.9	--	--	70	63
13..	680	650	8.2	8.0	7.4	4.0	82	75	690	660	8.5	7.9	--	--	74	66
14..	690	630	8.3	7.8	7.4	3.0	89	74	690	650	8.8	8.1	--	--	80	67
15..	690	630	8.4	8.1	7.3	2.4	90	75	700	630	8.5	7.9	--	--	72	68
16..	690	600	8.2	7.8	7.4	2.3	91	75	690	640	8.3	8.1	--	--	69	66
17..	770	620	8.1	7.6	6.9	2.3	83	75	680	600	8.2	7.7	--	--	71	64
18..	790	660	--	--	7.4	3.2	86	75	620	600	8.0	7.5	--	--	74	69
19..	760	690	--	--	7.7	3.4	84	72	620	600	--	--	--	--	77	71
20..	730	500	--	--	7.7	3.6	80	68	650	600	--	--	--	--	78	72
21..	700	650	--	--	8.1	4.0	74	68	660	600	--	--	--	--	77	72
22..	680	650	--	--	6.9	3.9	72	68	620	560	--	--	--	--	77	72
23..	680	650	--	--	8.1	4.2	77	66	600	520	--	--	--	--	76	70
24..	690	630	--	--	8.2	3.9	80	64	580	530	7.6	7.0	9.6	4.9	70	65
25..	690	620	--	--	8.2	3.7	73	69	590	530	7.7	6.8	10.2	5.6	69	62
26..	680	640	--	--	7.8	4.0	80	68	530	500	7.7	6.8	10.8	5.5	66	59
27..	880	610	--	--	7.0	.9	76	69	550	480	8.0	6.9	11.6	5.8	65	57
28..	750	730	--	--	4.5	.8	72	66	530	470	8.6	7.5	12.4	5.7	69	57
29..	720	680	--	--	6.3	--	74	63	560	510	8.2	7.2	13.6	6.0	72	60
30..	720	650	--	--	--	--	68	64	560	510	9.3	7.7	12.6	5.2	66	60
31..	830	640	--	--	8.3	7.3	69	65	--	--	--	--	--	--	--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1935. MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	106	5	1	169	6	3	189	9	5
2..	163	5	2	150	7	3	227	10	6
3..	150	5	2	143	7	3	267	10	7
4..	125	5	2	143	6	2	259	10	7
5..	106	5	1	163	6	3	267	11	8
6..	92	5	1	150	5	2	267	12	9
7..	75	6	1	106	5	1	240	14	9
8..	60	6	1	116	4	1	235	15	10
9..	156	6	3	137	4	1	275	14	10
10..	125	6	2	143	5	2	251	13	9
11..	44	6	1	176	5	2	275	13	10
12..	44	6	1	219	6	4	332	13	12
13..	101	6	2	227	8	5	342	13	12
14..	106	6	2	137	10	4	454	15	18
15..	101	6	2	101	12	3	519	15	21
16..	101	6	2	243	13	9	433	15	18
17..	106	6	2	243	13	9	402	14	15
18..	120	5	2	203	13	7	391	14	15
19..	156	5	2	169	13	6	320	--	18
20..	150	5	2	351	--	15	280	--	25
21..	203	4	2	530	--	30	361	16	16
22..	169	4	2	189	19	10	323	13	11
23..	34	4	T	150	15	6	294	12	10
24..	26	4	T	130	13	5	323	10	9
25..	101	4	1	176	13	6	465	9	11
26..	96	4	1	235	13	8	454	9	11
27..	87	5	1	189	13	7	423	9	10
28..	116	5	2	285	--	15	454	8	10
29..	120	5	2	351	--	17	465	8	10
30..	156	5	2	163	11	5	530	9	13
31..	211	6	3	--	--	--	351	10	10
Total	3506	--	51	5887	--	194	10668	--	365

Day	JANUARY			FEBRUARY			MARCH		
1..	313	10	8	2790	108	814	1410	49	186
2..	705	12	23	2090	80	451	3620	--	1000
3..	964	14	36	1620	64	280	8310	--	4000
4..	1570	16	68	1570	--	220	15800	265	11300
5..	1450	15	59	1450	--	170	27700	305	22800
6..	1100	14	42	1150	--	110	32600	425	37400
7..	887	13	31	1100	--	90	34600	348	32500
8..	933	13	33	1940	--	170	34500	285	26500
9..	980	12	32	4060	43	471	32100	215	18600
10..	1050	12	34	13300	212	S 10200	28300	164	12500
11..	1220	11	36	36200	1110	108000	23300	127	7990
12..	1050	11	31	34800	1070	100000	17900	104	5030
13..	995	11	30	26600	685	49200	13200	85	3030
14..	759	11	22	19300	431	22500	11700	67	2120
15..	700	--	35	14000	318	12000	10300	59	1640
16..	600	--	50	9750	253	6660	9720	62	1630
17..	480	--	30	8990	213	5170	8960	65	1300
18..	430	16	18	7100	174	3340	11700	78	2460
19..	470	15	19	5250	141	2000	12400	107	3580
20..	550	14	21	3580	122	1180	10400	112	3140
21..	550	13	19	3110	106	890	7880	99	2110
22..	500	12	16	1640	92	407	5890	115	1830
23..	600	--	40	1260	83	282	4450	--	1300
24..	2000	--	160	1200	77	249	3810	--	950
25..	8990	57	1380	1100	73	217	3390	--	650
26..	11300	122	3720	1000	67	181	3390	--	500
27..	13500	244	8890	900	60	146	2910	--	370
28..	15400	216	8980	800	54	117	2850	--	310
29..	11200	138	4170	--	--	--	3280	36	319
30..	8360	162	3660	--	--	--	7450	43	865
31..	5210	131	1840	--	--	--	16100	62	2700
Total	94816	--	33533	207650	--	325515	409920	--	210610

S Computed by subdividing day.
T Less than 0.50 ton.

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1935. MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	15700	248	10500	6490		1400	1910		190
2..	13300	221	7940	6010		1270	1360		130
3..	12900	150	5220	5090		900	963		90
4..	12100	147	4800	3950		600	1090		100
5..	9950	135	3630	5090		650	1170		100
6..	9990	133	3590	8010		950	1020		90
7..	19800	267	14300	10500		1100	980		85
8..	24700	750	50000	8730		900	1110		95
9..	23300	675	42500	6330		650	1400		120
10..	22900	537	33200	5290		550	1400		120
11..	20800	435	24400	4570		500	1190		110
12..	16600	374	16800	3490		400	980		90
13..	13200	309	11000	2520		270	675		60
14..	10300	213	5920	2070		220	582		55
15..	9680	180	4700	1910		200	506		45
16..	7970	179	3850	1790		170	556		50
17..	7250	179	3500	1090		90	582		55
18..	6690	145	2620	1040		75	506		50
19..	6570	109	1930	1060		70	458		45
20..	5850	89	1140	810		50	506		50
21..	5410	--	1100	929		55	458		45
22..	4650	--	900	780		45	377		35
23..	5130	--	950	810		45	494		45
24..	9590	--	5700	1020		55	366		35
25..	16800	324	14700	1280		70	333		35
26..	24200	376	24600	1520		100	333		35
27..	23200	333	20900	2020		150	446		45
28..	18000	228	11100	2320		240	434		45
29..	13200	--	4400	5170		1000	377		40
30..	9720	--	2300	5010		650	234		25
31..	--	--	--	2910		310	--		--
Total	399450	--	338190	109609		13665	22796		2115

Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	205	--	20	260	44	31	749	50	101
2..	267	--	30	328	43	38	518	38	53
3..	462	--	50	185	42	21	454	31	38
4..	355	--	40	145	42	16	415	29	32
5..	337	--	40	227	42	26	457	28	34
6..	301	43	35	278	42	32	325	26	23
7..	649	42	74	262	42	30	370	23	23
8..	506	42	57	299	43	35	327	20	18
9..	687	42	78	344	43	40	386	15	16
10..	921	41	102	263	44	31	350	10	9
11..	839	41	93	213	43	25	200	9	5
12..	562	40	61	317	42	36	168	10	5
13..	467	41	52	372	42	42	278	12	9
14..	346	41	38	233	40	25	275	12	9
15..	299	42	34	218	37	22	1460	--	220
16..	246	42	28	172	34	16	2570	--	400
17..	238	43	28	233	31	20	2570	--	340
18..	314	44	37	328	31	27	2770	--	370
19..	310	45	38	283	30	23	2010	--	250
20..	458	46	57	230	30	19	1350	40	146
21..	351	47	44	264	30	21	1010	37	101
22..	329	47	42	317	29	25	788	37	79
23..	230	48	30	306	29	24	684	36	66
24..	386	48	50	260	29	20	599	35	57
25..	428	49	57	230	29	18	571	32	49
26..	688	51	95	369	29	29	461	29	36
27..	658	50	89	584	--	60	371	26	26
28..	530	49	70	683	--	85	411	25	28
29..	392	48	51	597	--	75	391	24	25
30..	286	47	36	740	--	95	371	22	22
31..	242	46	30	1040	56	157	--	--	--
Total	13289	--	1586	10580	--	1164	23659	--	2590

Total discharge for year (cfs-days).. 1311830
Total load for year (tons).. 929578

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1935. MAUMEE RIVER AT WATERVILLE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Feb. 11, 1965......	1330			35900	1140		69	79	86	90	95	97	99	100				SBWC
Feb. 11............	1330			35900	1140		28	44	65	90	93	94	98	100				SBN
Feb. 11............	0800			36500	1050		71	78	86	91	95	98	99	100				SBWC
Mar. 5.............	1720			29500	324		69	75	85	91	96	98	99	100				SBWC
Mar. 5.............	1720			29500	324		23	35	58	82	92	93	97	98	100			SBN
Apr. 28............	1330			17900	224		75	85	89	96	98	99	100	--				SBWC

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1940.1. MAUMEE RIVER AT CRAIG BRIDGE, AT TOLEDO, OHIO

LOCATION.--At Craig Bridge in Toledo, Lucas County, 1.5 miles downstream from Swan Creek, and about 3.5 miles upstream from mouth.
RECORDS AVAILABLE.--Chemical analyses: June 1962 to September 1964, May to September 1965.
REMARKS.--Determinations of suspended solids, biochemical oxygen demand (BOD), and dissolved oxygen (DO) furnished by the city of Toledo, Division of Sewage Disposal. No discharge records available.

Chemical analyses, in parts per million, May to September 1965

Date of collection	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Suspended solids at 110°C	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Biochemical oxygen demand (BOD)
																			Calcium, magnesium	Noncarbonate					
May 12, 1965.							--			174	0	85	20		--	--	--	51	262	119		519	8.1	25	3.0
May 19.......							--			170	0	88	22		--	--	--	66	262	122		529	8.0	23	1.4
May 26.......							14			162	0	98	21		15	0.85	392	50	262	133		569	7.4	25	3.4
June 9.......							29			226	0	139	39		.6	1.0	482	44	336	151		716	7.4	23	5.0
June 30......							--			146	0	95	30		--	--	--	25	234	113		547	7.1	15	4.3
July 21......							--			134	0	102	32		--	--	--	48	218	108		520	7.7	20	2.6
July 26......							27			142	0	115	36		5.2	.72	374	88	240	124		566	7.8	16	1.6
Aug. 11......							33			164	0	107	44		6.0	.96	398	30	250	116		615	7.6	15	3.2
Aug. 18......							--			170	0	105	44		--	--	--	19	248	109		608	7.6	15	4.0
Sept. 22.....							36			206	0	96	44		4.7	1.1	414	62	266	96		642	7.7	23	2.0
Sept. 29.....							--			222	0	101	43		5.4	--	--	37	276	94		671	7.4	18	5.6

Chemical analyses, in parts per million, May to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Alkyl benzene sulfonate (ABS)					
May 12, 1965...........	6.7	72		--				110	
May 19.................	5.6	61		--				10	
May 26.................	5.7	64		0.1				5	
June 9.................	5.2	60		.1				.2	
June 30................	2.1	25		--				.3	
July 21................	4.2	50		--				.4	
July 28................	3.0	36		.1				45	
Aug. 11................	2.7	31		.1				15	
Aug. 18................	2.6	32		--				4	
Sept. 22...............	6.2	72		.1				45	
Sept. 29...............	3.6	38		--				.2	

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1940.22. MAUMEE RIVER AT TOLEDO OVERSEAS TERMINAL DOCK, AT TOLEDO, OHIO

LOCATION.--At Toledo Overseas Terminal dock in Toledo, Lucas County, about 1 mile upstream from the mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1965.
REMARKS.--Determinations of suspended solids, biochemical oxygen demand (BOD), and dissolved oxygen (DO) were furnished by the city of Toledo, Division of Sewage and Disposal. No discharge records available.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Suspended solids at 110°C	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Biochemical oxygen demand (BOD)
Oct. 21, 1964							30			104	0	68	47		18	1.7	282	--	174	89		492	7.8	7	--
Oct. 28......							--			122	0	66	42		--	--	--	--	175	75		487	7.1	7	--
Nov. 4.......							36			102	0	77	51		23	1.8	316	66	180	96		528	7.6	10	3.6
Nov. 10......							--			122	0	72	44		--	--	--	62	178	78		524	7.0	5	4.2
Nov. 18......							--			118	0	48	35		--	--	--	42	158	62		420	7.4	5	3.6
Dec. 2.......							--			112	0	74	42		--	--	--	76	184	92		524	7.8	12	5.3
Dec. 9.......							--			116	0	68	58		--	--	--	38	178	83		549	7.6	5	5.2
Dec. 16......							--			134	0	75	56		--	--	--	42	189	79		573	7.0	5	5.0
Dec. 23......							--			168	0	99	60		--	--	--	28	220	82		687	7.2	5	5.5
Dec. 30......							66			222	0	140	70		.2	1.6	496	42	272	90		849	7.7	20	7.4
Jan. 6, 1965.							77			252	0	185	84		4.1	2.1	612	18	324	117		946	7.7	20	8.0
Jan. 13......							--			262	0	153	74		--	--	--	46	326	111		926	7.6	20	9.8
Jan. 27......							--			154	0	122	44		--	--	--	154	274	148		687	7.1	30	5.7
Feb. 10......							19			118	0	101	29		29	.81	344	88	236	140		550	6.9	30	5.0
Feb. 17......							--			96	0	66	12		--	--	--	238	171	92		377	7.0	35	4.1
Mar. 3.......							--			136	0	104	27		--	--	--	64	250	139		547	7.7	35	3.6
Mar. 10......							--			88	0	58	14		--	--	--	174	165	93		364	7.0	30	3.7
Mar. 17......							--			118	0	83	18		--	--	--	72	218	122		458	7.4	30	5.6
Mar. 31......							14			152	0	110	25		24	.57	--	82	278	153		571	7.2	10	7.6
Apr. 7.......							--			84	18	81	22		--	--	--	103	224	125		485	8.9	10	3.5
Apr. 14......							--			118	4	70	17		--	--	--	220	210	107		437	8.3	18	2.6
Apr. 21......							11			154	0	90	24		24	.55	354	84	264	138		528	7.4	20	2.6
Apr. 28......							--			132	0	71	17		--	--	--	172	218	110		453	7.3	22	3.5
May 5........							--			154	0	83	20		--	--	--	119	254	128		514	7.3	20	4.0
May 12.......							14			182	0	94	27		19	.70	350	40	276	127		563	8.0	22	1.8
May 19.......							--			162	0	86	23		--	--	--	52	254	121		522	7.5	23	2.6
May 28.......							--			164	0	93	31		--	--	--	40	260	125		558	7.3	20	2.0
June 9.......							26			220	0	123	37		2.2	1.2	426	37	316	136		672	7.7	17	1.2
June 30......							--			138	0	77	35		--	--	--	27	204	91		498	7.4	13	10.3

July 21, 1965							--			118	0	85	38		--	--	--	32	192	96		493	7.0	9	5.6
July 26......							27			126	0	92	36		5.4	1.7	312	32	205	102		514	7.4	15	2.6
Aug. 11......							--			122	0	73	38		--	--	--	42	190	90		479	7.8	10	3.4
Aug. 18......							31			140	0	88	42		3.5	2.0	320	19	214	100		546	7.7	15	7.0
Sept. 22.....							39			194	0	99	46		9.4	1.2	394	28	256	96		650	7.4	17	2.8
Sept. 29.....							--			180	0	92	43		9.3	--	--	19	236	88		606	7.1	15	6.2

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1940.22. MAUMEE RIVER AT TOLEDO OVERSEAS TERMINAL DOCK, AT TOLEDO, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 21, 1964	--	--		0.2				15	
Oct. 28	--	--		--				20	
Nov. 4	1.7	17		.3				15	
Nov. 10	1.5	14		--				20	
Nov. 18	8.0	71		--				15	
Dec. 2	6.7	50		--				15	
Dec. 9	9.8	68		--				10	
Dec. 16	10.1	71		--				15	
Dec. 23	8.2	61		--				10	
Dec. 30	5.6	43		.5				15	
Jan. 6, 1965	11.2	83		.5				20	
Jan. 13	12.6	94		--				20	
Jan. 27	11.7	80		--				140	
Feb. 10	11.7	82		.1				80	
Feb. 17	11.7	85		--				360	
Mar. 3	11.6	82		--				85	
Mar. 10	11.8	82		--				90	
Mar. 17	11.6	86		--				20	
Mar. 31	11.9	88		.1				8	
Apr. 7	11.3	93		--				65	
Apr. 14	9.7	86		--				350	
Apr. 21	9.9	86		.1				40	
Apr. 28	9.9	86		--				150	
May 5	10.0	97		--				50	
May 12	5.5	59		.1				70	
May 19	5.2	56		--				45	
May 26	3.1	34		--				20	
June 9	1.8	20		.1				8	
June 30	5.7	66		--				3	
July 21	2.7	31		--				1	
July 28	2.8	33		.2				4	
Aug. 11	2.0	23		--				15	
Aug. 18	2.2	27		.1				3	
Sept. 22	1.4	16		.1				25	
Sept. 29	1.1	12		--				.4	

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1940.3. MAUMEE RIVER AT CENTER C & O RAILROAD DOCK, AT TOLEDO, OHIO

LOCATION.--At mouth at end of center dock of Chesapeake and Ohio Railroad coal-loading docks, at Toledo, Lucas County.
RECORDS AVAILABLE.--Chemical analyses: June 1962 to September 1965.
REMARKS.--Determinations of suspended solids, biochemical oxygen demand (BOD), and dissolved oxygen (DO) furnished by the city of Toledo, Division of Sewage Disposal. No discharge records available.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Suspended solids at 110°C	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Biochemical oxygen demand (BOD)
Oct. 21, 1964							--			120	0	48	42		--	--	--	--	160	62		435	7.2	5	--
Oct. 28......							26			122	0	54	42		10	1.1	268	--	172	72		457	8.0	12	--
Nov. 4.......							33			110	0	67	48		18	1.2	304	44	172	82		496	7.5	5	4.4
Nov. 10......							--			126	0	61	41		--	--	--	56	163	60		480	7.1	5	3.8
Nov. 18......							--			114	0	48	35		--	--	--	44	154	60		411	7.1	5	3.8
Dec. 2.......							--			131	0	50	35		--	--	--	20	164	56		445	7.2	5	5.6
Dec. 16......							--			125	0	56	46		--	--	--	38	168	66		483	8.0	5	4.9
Dec. 23......							--			162	0	87	56		--	--	--	36	202	69		631	7.2	10	6.2
Dec. 30......							50			146	0	100	60		18	1.5	430	28	222	103		664	8.0	10	5.4
Jan. 6, 1965.							--			117	0	74	48		--	--	--	26	184	88		553	7.2	10	9.1
Jan. 13......							--			150	0	78	50		--	--	--	54	202	79		571	7.7	5	6.7
Jan. 27......							39			176	0	135	56		29	1.7	478	92	306	162		768	7.2	20	5.4
Feb. 10......							24			110	0	104	36		37	10	350	74	232	142		568	7.3	30	5.5
Feb. 17......							--			90	0	64	12		--	--	--	270	164	90		365	6.7	35	3.7
Feb. 24......							--			106	0	81	18		--	--	--	136	197	110		436	6.8	40	3.8
Mar. 3.......							20			126	0	97	30		22	2.1	--	80	236	133		533	6.9	35	5.0
Mar. 10......							--			86	0	55	13		--	--	--	182	161	90		362	7.1	40	3.7
Mar. 17......							--			118	0	84	20		--	--	--	78	223	127		475	7.1	35	5.1
Apr. 7.......							--			132	0	83	20		--	--	--	115	233	125		490	7.8	40	3.8
Apr. 14......							--			120	0	68	14		--	--	--	218	210	112		429	7.7	10	3.5
Apr. 21......							12			154	0	88	20		25	.66	342	73	266	140		529	7.6	27	3.2
Apr. 28......							--			132	0	70	16		--	--	--	156	218	110		456	7.1	40	3.6
May 5........							--			152	0	86	22		--	--	--	152	250	126		535	7.2	25	3.1
May 12.......							14			168	0	88	22		20	.70	352	35	265	127		544	7.9	28	2.0
May 19.......							--			158	0	83	24		--	--	--	68	246	117		522	7.2	20	3.6
May 26.......							--			160	0	85	26		--	--	--	76	248	117		538	7.3	15	2.6
June 9.......							23			194	0	100	32		.9	.80	384	48	280	121		600	7.3	22	1.6
June 30......							--			140	0	69	32		--	--	--	60	188	74		470	7.3	10	9.0

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1940.3. MAUMEE RIVER AT CENTER C & O RAILROAD DOCK, AT TOLEDO, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Suspended solids at 110°C	Hardness as $CaCO_3$		Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Biochemical oxygen demand (BOD)
																			Calcium, magnesium	Noncarbonate					
July 21, 1965							--			116	0	72	32		--	---	--	41	180	85		457	7.4	10	2.2
July 28......							24			122	0	74	32		4.0	0.90	302	43	182	82		467	7.3	17	2.4
Aug. 11......							--			130	0	56	30		--	--	--	48	172	66		433	7.3	10	2.0
Aug. 18......							25			118	0	64	34		8.1	1.3	268	21	174	78		457	7.7	10	4.8
Sept. 22.....							31			158	0	76	37		2.6	.81	316	56	206	76		530	7.5	13	2.4
Sept. 29.....							--			176	0	84	42		3.4	--	--	29	222	76		578	7.0	15	5.4

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1940.3. MAUMEE RIVER AT CENTER C & O RAILROAD DOCK, AT TOLEDO, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 21, 1964	--	--		--				15	
Oct. 28	--	--		0.2				90	
Nov. 4	3.0	30		.2				15	
Nov. 10	3.9	37		--				10	
Nov. 18	7.6	66		--				7	
Dec. 2	10.4	73		--				30	
Dec. 16	11.5	81		--				30	
Dec. 23	9.1	66		--				20	
Dec. 30	7.1	--		.2				15	
Jan. 6, 1965	12.0	87		--				20	
Jan. 13	13.2	93		--				20	
Jan. 27	11.7	80		.4				110	
Feb. 10	10.7	77		.2				50	
Feb. 17	11.6	83		--				450	
Feb. 24	12.1	83		--				210	
Mar. 3	10.9	79		.1				35	
Mar. 10	11.8	82		--				240	
Mar. 17	11.5	85		--				40	
Apr. 7	11.0	90		--				90	
Apr. 14	5.4	47		--				400	
Apr. 21	9.6	83		.1				70	
Apr. 28	9.9	86		--				170	
May 5	8.6	85		--				20	
May 12	5.8	63		.1				55	
May 19	5.4	59		--				1	
May 26	4.1	44		--				2	
June 9	3.4	38		.1				.3	
June 30	1.8	21		--				.4	
July 21	3.8	43		--				.3	
July 28	2.8	32		.2				.6	
Aug. 11	3.8	43		--				15	
Aug. 18	1.6	19		.1				7	
Sept. 22	4.3	48		.1				10	
Sept. 29	1.4	14		--				.9	

STREAMS TRIBUTARY TO LAKE ERIE--Continued

ANALYSES OF SAMPLES COLLECTED AT SELECTED SITES IN MAUMEE RIVER AT TOLEDO, OHIO

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Suspended solids at 110°C	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Biochemical oxygen demand (BOD)	Dissolved oxygen: Parts per million	Dissolved oxygen: Per cent saturation	Detergent (MBAS)	Turbidity
4-1940.5. MAUMEE RIVER AT BUOY 39, AT TOLEDO																									
May 26, 1965.			--			126	0	57	26		--	--	--	76	169	86		426	7.9	10	3.2	6.5	69	--	50
June 30......			--			132	0	51	26		--	--	--	100	174	66		412	7.7	7	6.3	5.6	64	--	25
July 21......			12			106	0	50	32		3.5	0.70	214	47	152	65		379	7.7	6	5.4	7.5	85	0.0	20
Aug. 18......			13			116	0	44	30		4.3	.64	244	26	150	55		378	7.7	9	2.6	5.2	62	.1	8
Sept. 22.....			12			118	0	35	30		2.1	.35	200	46	146	50		359	7.3	5	3.0	7.5	83	.0	9
MAUMEE RIVER AT BUOY 37, AT TOLEDO																									
May 12, 1965.			12			134	0	54	33		12	0.52	260	37	202	92		453	7.9	10	3.2	9.4	101	0.0	40
May 19.......						134	0	60	26					83	200	90		446	7.5	10	3.2	7.7	82		50
4-1940.7. MAUMEE RIVER AT BUOY 31, AT TOLEDO																									
June 9, 1965.			10			134	0	53	27		5.8	0.39	246	51	182	72		415	7.4	6	1.8	7.5	82	0.1	30
July 28......						118	0	30	24		--			58	144	48		336	7.6	5	2.2	6.7	76		15
Aug. 11......						114	0	29	24		--			32	136	42		324	7.5	6	2.2	8.0	89		9
Sept. 29.....						120	0	32	26		2.6			44	138	40		340	7.2	5	5.2	8.2	80		5

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1980. SANDUSKY RIVER NEAR FREMONT, OHIO

LOCATION (revised).--At gaging station at highway bridge, 2.3 miles upstream from Ballville power dam, 2.3 miles downstream from Wolf Creek, and 3.5 miles southwest of Fremont, Sandusky County.
DRAINAGE AREA (revised).--1,251 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to February 1952, October 1962 to September 1965.
Water temperatures: October 1950 to September 1956, October 1962 to September 1965.
Sediment records: October 1950 to September 1956.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 1,160 micromhos Dec. 11-14; minimum daily, 332 micromhos May 28.
Water temperatures: Maximum, 86°F July 16, minimum daily; 33°F several days during December to February.
EXTREMES, 1950-56, 1962-65.--Specific conductance (1950-52, 1963-65): Maximum daily, 1,250 micromhos Dec. 14, 1963; minimum daily, 184 miromhos Jan. 27, 1952.
Water temperatures: Maximum, 91°F July 31, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Samples for iron and manganese filtered clear when collected. Daily samples were collected at this station and samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) special sample to further define quality of water, and (4) a composite analysis of all daily samples for each month. No special samples was collected during the months of February and July. No samples taken July 22 through Sept. 9.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed: Filtered	Oxygen consumed: Unfiltered
Oct. 3, 1964..	21			--	--						205	0	267	40	0.9	1.1	--	640	454	286		931	8.1		--	--
Oct. 22.......	21			0.01	1.2						--	--	--	--	--	--	0.37	--	--	--		--	--		2	2
Oct. 23.......	19			--	--						258	0	304	60	1.3	1.5	--	760	517	305		1080	8.1		--	--
Oct. 1-31.....	18.3			--	--						179	0	283	50	1.1	.2	--	712	480	333		1000	6.5		--	--
Nov. 1........	22			--	--						248	7	285	58	1.2	1.8	--	736	500	285		1070	8.4		--	--
Nov. 19.......	31			.06	.29						--	--	--	--	--	--	.97	--	--	--		--	--		3	4
Nov. 29.......	72			--	--						275	2	277	44	.9	5.1	--	714	514	285		1020	8.3		--	--
Nov. 1-30.....	36.4			--	--						278	2	281	51	.9	3.4	--	732	516	284		1040	8.3		--	--
Dec. 11.......	85			--	--						310	0	354	42	.8	4.4	--	808	610	356		1160	7.8		--	--
Dec. 14.......	172			.19	.19						--	--	--	--	--	--	1.3	--	--	--		1160	--		3	5
Dec. 28.......	720			--	--						139	0	146	30	.4	23	--	403	290	176		636	7.2		--	--
Dec. 1-31.....	168			--	--						240	0	254	44	.6	11	--	652	468	271		973	7.8		--	--
Jan. 3, 1965..	726			--	--						151	0	140	89	.2	15	--	519	313	189		807	7.9		--	--
Jan. 25.......	6500			--	--						88	0	69	15	.4	2.6	--	223	174	102		385	7.0		--	--
Jan. 27.......	5280			.54	.08						--	--	--	--	--	--	.54	--	--	--		--	--		4	8
Jan. 1-14, 23-30.........	1634			--	--						126	0	126	33	.2	4.8	--	372	274	171		591	7.4		--	--
Feb. 14.......	3280			--	--						94	0	70	16	.2	25	--	248	182	105		395	6.9		--	--
Feb. 22.......	320			--	--						186	0	164	28	.2	22	--	492	356	203		712	7.2		--	--
Feb. 1, 7-23, 27-28.......	1414			--	--						136	0	116	23	.2	24	--	354	266	154		556	7.0		--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1980. SANDUSKY RIVER NEAR FREMONT, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed: Filtered	Oxygen consumed: Unfiltered
Mar. 3, 1965..	5740			0.85	0.00						--	--	--	--	--	--	0.51	--	--	--		--	--		4	7
Mar. 5........	8820			--	--						84	0	65	14	0.2	28	--	232	168	99		367	7.7		--	--
Mar. 27.......	551			--	--						190	0	170	26	.3	14	--	480	371	215		716	7.9		--	--
Mar. 1-20, 25-31..........	3102			--	--						130	0	105	19	.2	23	--	331	290	183		521	7.7		--	--
Apr. 11.......	3660			--	--						106	0	79	12	.2	22	--	265	195	108		418	6.9		--	--
Apr. 14.......	1390			.78	.03						--	--	--	--	--	--	.44	--	--	--		--	--		5	8
Apr. 22.......	421			--	--						191	0	153	24	.3	13	--	448	345	188		679	7.7		--	--
Apr. 1-30.....	1902			--	--						138	0	109	18	.2	22	--	333	262	149		524	7.7		--	--
May 17........	191			--	--						222	0	182	28	.1	4.5	--	501	386	204		742	7.4		--	--
May 25........	203			.43	.02						--	--	--	--	--	--	.50	--	--	--		--	--		6	8
May 28........	1350			--	--						110	0	50	11	.1	19	--	206	157	67		332	7.2		--	--
May 1-18, 25-31..........	425			--	--						186	0	154	24	.1	9.0	--	443	332	179		657	8.0		--	--
June 1........	175			--	--						228	0	152	24	.3	11	--	472	376	189		733	7.7		--	--
June 7........	540			--	--						168	0	100	20	.2	21	--	344	272	134		548	8.2		--	--
June 23.......	71			.09	.01						--	--	--	--	--	--	.44	--	--	--		--	--		3	5
June 1-30.....	250			--	--						165	0	131	24	.3	8.0	--	397	294	159		612	7.7		--	--
July 4........	67			--	--						165	5	172	34	.6	1.8	--	455	333	189		697	8.4		--	--
July 20.......	36			--	--						202	0	184	31	.4	1.4	--	495	374	208		747	8.2		--	--
July 1-12, 14-21..........	55.5			--	--						187	5	176	35	.5	1.4	--	477	359	197		723	8.3		--	--
Sept. 9.......	41			.01	.12						--	--	--	--	--	--	1.1	--	--	--		--	---		3	4
Sept. 21......	62			--	--						206	4	206	36	.7	2.3	--	556	406	230		816	8.3		--	--
Sept. 30......	30			--	--						215	3	245	42	.0	1.7	--	658	448	267		914	8.3		--	--
Sept. 19-30...	47			--	--						213	0	223	36	.7	2.4	--	597	419	239		874	8.2		--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1980. SANDUSKY RIVER NEAR FREMONT, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold odor[a]
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 22, 1964	10.6	95		0.2				4	M-1
Nov. 19	11.5	94		.3				4	0
Dec. 14	8.6	60		.2				20	0
Jan. 27, 1965	9.3	65		.1				120	0
Mar. 3	11.0	77		.1				130	M-4
Apr. 14	8.6	79		.1				110	0
May 25	7.6	92		.1				65	0
June 23	7.6	96		.1				--	Mm-4
Sept. 9	--	--		.1				--	Mm-4

a The dilution ratio at which odor is just detectable; M-musty, Mm-moldy.

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1980. SANDUSKY RIVER NEAR FREMONT, OHIO--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	955	1070	1080	739	534	492	453	594	733	703	--	--
2.....	960	1060	1060	738	--	389	480	599	665	706	--	--
3.....	931	1060	1070	807	--	387	476	602	667	703	--	--
4.....	879	1050	1010	682	--	395	543	608	578	697	--	--
5.....	926	1050	1070	540	--	367	550	613	574	712	--	--
6.....	879	1050	1070	534	--	371	577	643	574	703	--	--
7.....	881	1060	1080	611	685	370	547	643	548	706	--	--
8.....	926	1050	1090	613	687	425	444	680	550	725	--	--
9.....	879	1040	1080	613	537	424	435	678	568	725	--	--
10.....	928	1040	1080	658	536	453	419	678	638	743	--	847
11.....	928	1050	1160	661	--	516	418	681	588	736	--	838
12.....	973	1050	1160	623	408	516	478	673	577	744	--	840
13.....	971	1040	1160	622	403	564	463	670	586	--	--	845
14.....	973	1050	1160	629	395	568	456	668	622	716	--	840
15.....	971	1040	1080	--	453	599	560	695	622	725	--	860
16.....	971	1070	1070	--	452	601	568	676	624	716	--	860
17.....	1010	1070	1070	--	552	593	605	742	563	713	--	857
18.....	1000	1060	929	--	554	596	608	682	562	730	--	855
19.....	1010	1050	926	--	626	592	605	--	548	738	--	862
20.....	1010	1030	926	--	628	592	652	--	551	747	--	818
21.....	1000	1050	931	--	630	--	646	--	562	747	--	816
22.....	1070	1050	971	--	712	--	679	--	589	--	--	819
23.....	1080	1050	973	596	709	--	511	--	629	--	--	821
24.....	1070	1060	973	597	--	--	507	--	622	--	--	818
25.....	1070	1070	989	385	--	681	533	726	620	--	--	875
26.....	1070	1070	664	424	--	685	539	726	651	--	--	872
27.....	1050	1070	638	424	491	716	472	338	644	--	--	875
28.....	1040	1050	636	459	489	713	468	332	651	--	--	877
29.....	1040	1020	654	462	--	609	492	710	676	--	--	872
30.....	1040	1020	652	460	--	475	497	714	667	--	--	914
31.....	1040	--	638	--	--	470	--	730	--	--	--	--
Average	985	1050	969	--	--	524	522	644	608	--	--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1980. SANDUSKY RIVER NEAR FREMONT, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	60	58	56	57	58	57	57	60	60	60	59	58	60	60	59	62	60	58	57	43	47	46	44	--	53	55	56	55	56	56	54	56
November	57	58	61	60	58	57	58	56	56	57	59	58	56	55	53	52	50	49	48	47	42	41	40	41	40	42	41	40	40	38	--	50
December	36	37	36	34	34	34	33	33	33	33	35	38	35	34	33	33	33	34	34	35	36	35	35	35	34	35	34	37	40	42	37	35
January	35	35	34	36	36	35	35	43	42	35	36	37	35	34	--	--	--	--	--	--	--	--	34	34	34	35	35	34	33	33	--	--
February	40	--	--	--	--	--	33	33	35	38	--	37	34	36	36	36	36	36	35	34	34	34	33	--	--	--	33	33	--	--	--	--
March	34	34	35	38	38	37	37	36	37	36	36	--	36	38	38	41	40	38	36	35	--	--	--	--	37	36	37	42	38	39	39	37
April	39	41	39	42	44	55	45	51	52	51	55	53	52	51	52	53	50	46	47	55	56	58	51	49	48	50	51	53	56	59	--	50
May	63	68	71	67	68	72	74	77	78	74	74	75	74	73	75	73	67	77	--	--	--	--	--	--	77	74	68	69	70	71	71	72
June	73	65	61	65	69	74	73	74	76	78	76	72	74	68	69	71	71	74	76	76	80	84	82	80	83	85	84	84	84	81	--	75
July	81	82	81	80	81	80	81	85	83	81	80	81	85	84	85	86	84	83	79	77	79	--	--	--	--	--	--	--	--	--	--	--
August	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
September	--	--	--	--	--	--	--	--	--	74	73	70	72	74	77	75	76	74	76	76	76	79	77	75	74	70	71	67	71	73	--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-1990. HURON RIVER AT MILAN, OHIO

LOCATION.--Temperature recorder at gaging station on right bank, 500 feet downstream from bridge on U.S. Highway 250, 0.2 mile northwest of Milan, Erie County, and 2 miles downstream from confluence of East and West Branches.
DRAINAGE AREA.--363 square miles.
RECORDS AVAILABLE.--Chemical analyses: March 1950 to February 1952.
Water temperatures: March to August 1950, July 1953 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 88°F Aug. 15, 16; minimum, 33°F on many days during December to February.
EXTREMES, 1953-65.--Water temperatures: Maximum, 92°F July 19, 26, 1964; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	52	56	53	50	57	54	53	52	52	49	49	48	55	55	56	57	57	56	54	50	49	50	50	48	50	54	54	57	57	53	50	53
Minimum	44	50	47	46	42	49	47	49	49	47	43	44	48	49	50	51	52	52	50	45	46	47	47	44	44	48	51	53	53	48	45	48
November																																
Maximum	50	52	55	55	54	53	47	47	48	50	54	54	54	50	48	54	53	47	44	41	38	35	34	35	37	39	41	44	44	37	--	46
Minimum	46	47	51	51	52	47	44	45	44	47	50	52	50	45	44	48	47	44	41	38	35	34	34	34	34	37	38	41	37	34	--	43
December																																
Maximum	34	34	34	36	36	35	34	34	34	34	36	36	36	35	34	34	33	34	34	34	33	33	33	40	43	41	41	37	39	44	42	36
Minimum	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	34	33	33	33	33	33	39	41	37	36	34	39	37	34
January																																
Maximum	38	37	37	36	35	36	38	45	45	40	36	34	34	36	34	34	34	34	34	34	33	33	33	35	35	38	38	34	35	37	35	36
Minimum	35	35	36	35	34	34	34	38	40	36	34	33	33	33	33	34	34	34	34	33	33	33	33	33	35	35	34	33	33	35	35	34
February																																
Maximum	36	37	37	37	36	35	35	34	34	41	41	42	42	38	38	39	41	40	37	37	36	38	37	36	35	35	36	36	--	--	--	37
Minimum	35	35	36	36	35	34	33	33	34	33	40	41	38	36	35	36	36	37	36	35	35	35	36	35	35	35	34	36	--	--	--	36
March																																
Maximum	36	36	38	40	40	39	39	40	40	40	40	41	42	41	41	45	43	44	41	38	37	42	42	41	40	40	45	49	46	42	44	41
Minimum	36	36	36	38	38	38	39	39	39	39	38	38	37	39	39	39	40	41	37	37	37	35	36	36	36	37	36	37	41	39	38	38
April																																
Maximum	43	44	47	45	48	58	62	57	58	56	60	60	56	58	54	52	52	50	57	56	60	62	60	58	51	51	51	57	63	67	--	55
Minimum	39	40	39	41	42	46	53	52	49	48	51	52	49	48	51	48	46	45	43	47	50	52	51	50	49	51	49	47	49	52	--	48
May																																
Maximum	66	74	75	71	66	73	76	78	80	76	70	73	73	73	75	74	72	74	76	73	72	75	71	73	79	77	76	72	65	68	72	73
Minimum	56	61	61	63	59	60	63	66	68	69	63	61	61	60	62	67	63	58	68	63	59	67	64	61	67	70	69	62	57	55	60	63
June																																
Maximum	74	72	64	68	72	76	73	69	71	75	77	80	76	71	71	74	76	76	79	79	77	82	80	81	78	77	83	85	85	83	--	76
Minimum	63	63	60	58	60	66	68	66	65	65	67	66	64	62	60	63	64	63	64	67	70	68	74	71	66	64	69	77	73	74	--	66
July																																
Maximum	78	77	80	82	81	79	78	83	81	82	80	81	82	80	82	82	81	82	78	76	77	77	85	85	86	81	81	80	77	78	76	80
Minimum	64	67	68	70	72	67	72	71	74	73	68	69	69	75	72	72	75	75	71	67	65	68	75	76	77	72	73	72	69	67	68	71
August																																
Maximum	75	71	76	75	78	84	81	78	78	75	76	80	81	85	88	88	84	82	81	77	74	72	77	76	73	79	78	76	71	68	68	78
Minimum	70	67	64	68	66	74	76	74	73	70	65	68	72	76	78	79	77	75	76	69	68	68	68	66	67	68	72	66	60	64	64	70
September																																
Maximum	73	74	73	78	78	75	77	76	80	81	79	70	71	76	76	72	76	81	81	81	81	80	78	74	64	64	64	63	68	69	--	74
Minimum	68	63	64	68	72	69	69	73	71	75	69	67	70	68	71	65	64	73	74	75	75	75	73	63	60	59	59	58	62	64	--	68

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2005. BLACK RIVER AT ELYRIA, OHIO

LOCATION.--At gaging station on left bank in Cascade Park at Elyria, Lorain County, 0.8 mile downstream from confluence of East and West Branches.
DRAINAGE AREA.--396 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1962 to September 1965.
Water temperatures: October 1962 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 2,120 micromhos Oct. 14; minimum daily, 289 micromhos Jan. 25.
Water temperatures: Maximum, 77°F June 28, 29, July 7, 20; minimum, 33°F on many days during January to March.
EXTREMES, 1962-65.--Specific conductance: Maximum daily, 2,120 micromhos Oct. 14, 1964; minimum daily, 215 micromhos Mar. 13, 1963.
Water temperatures: Maximum, 77°F June 28, 29, July 7, 20, 1965; minimum, freezing point on many days during winter months in 1963.
REMARKS.--Samples collected for iron and manganese were filtered clear when collected. Values reported for acidity are potential free except as noted. All acidity was determined to pH 7.0. Samples were selected for analysis on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) special sample each month to further define quality of water, and (4) a composite analysis of all daily samples for each month.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed	
																			Calcium, magnesium	Noncarbonate					Filtered	Unfiltered
Oct. 14, 1964	7.8			--	--						78	0	344	330	0.4	2.7	--	1040	251	187	--	2120	6.8	--	--	--
Oct. 16......	30			--	--						2	0	232	105	.7	31	--	580	235	234	0.0	973	5.1	--	--	--
Oct. 22......	11			0.13	0.15						--	--	--	--	--	--	3.9	--	--	--	--	--	--	--	32	32
Oct. 1-31....	10.7			--	--						75	0	254	230	.7	54	--	814	224	163	--	1590	6.7	--	--	--
Nov. 4.......	13			--	--						28	0	278	328	1.7	20	--	1050	238	215	--	2070	6.0	80	--	--
Nov. 19......	15			.32	.21						--	--	--	--	--	--	4.1	--	--	--	--	--	--	--	35	35
Nov. 24......	9.6			--	--						9	0	237	145	1.5	76	--	700	216	209	--	1200	5.9	50	--	--
Nov. 1-30....	8.9			--	--						0	0	263	238	1.5	113	--	886	250	250	.2	1640	4.5	32	--	--
Dec. 4.......	44			--	--						187	0	229	265	.8	22	--	798	236	83	--	1710	7.8	--	--	--
Dec. 14......	36			1.6	.43						--	--	--	--	--	--	2.2	--	--	--	--	--	--	--	6	7
Dec. 27......	89			--	--						134	0	161	132	.5	32	--	604	276	166	--	1000	6.9	--	--	--
Dec. 1-31....	34.2			--	--						98	0	204	185	.6	39	--	742	288	207	--	1300	6.9	--	--	--
Jan. 1, 1965.	38			--	--						72	0	226	190	.2	53	--	780	382	323	--	1280	7.0	--	--	--
Jan. 25......	4940			--	--						48	0	54	18	.0	16	--	176	112	72	--	289	7.0	--	--	--
Jan. 27......	1080			.78	.00						--	--	--	--	--	--	.60	--	--	--	--	--	--	--	5	7
Jan. 1-31....	611			--	--						78	0	147	68	.2	26	--	451	244	180	--	708	7.2	--	--	--
Feb. 1.......	90			--	--						104	0	161	54	.4	26	--	444	266	181	--	705	7.3	--	--	--
Feb. 12......	2260			--	--						69	0	88	26	.2	13	--	254	162	106	--	416	7.0	--	--	--
Feb. 1-2, 10-17.........	814			--	--						79	0	110	37	.2	17	--	325	200	136	--	516	6.7	--	--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2005. BLACK RIVER AT ELYRIA, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed: Filtered	Oxygen consumed: Unfiltered
Mar. 3, 1965.	1570			0.60	0.00						--	--	--	--	--	--	0.42	--	--	--	--	--	--	--	5	7
Mar. 25......	110			--	--						98	0	153	72	0.2	7.7	--	452	264	183	--	758	6.7	--	--	--
Mar. 31......	638			--	--						58	0	100	34	.1	18	--	276	174	127	--	451	6.8	--	--	--
Mar. 6-31....	518			--	--						92	0	121	46	.1	14	--	350	223	148	--	577	7.2	--	--	--
Apr. 11......	169			--	--						200	0	254	128	.1	5.9	--	776	487	323	--	1150	7.6	--	--	--
Apr. 13......	360			--	--						96	0	92	27	.1	4.3	--	279	187	109	--	451	6.8	--	--	--
Apr. 14......	194			3.9	.11						--	--	--	--	--	--	.70	--	--	--	--	--	--	--	7	8
Apr. 1-30....	224			--	--						108	0	138	49	.0	9.0	--	402	243	155	--	625	7.8	--	--	--
May 25.......	26			.26	.15						--	--	--	--	--	--	1.6	--	--	--	--	--	--	--	8	8
May 26.......	132			--	--						146	0	184	90	.2	23	--	597	272	152	--	968	7.7	--	--	--
May 29.......	132			--	--						86	0	114	40	.1	15	--	339	196	126	--	548	7.0	--	--	--
May 3-31.....	81.9			--	--						130	0	162	68	.2	17	--	492	263	156	--	784	7.2	--	--	--
June 3.......	755			--	--						106	0	84	38	.3	13	--	316	188	101	--	501	7.1	--	--	--
June 23......	20			.48	.36						--	--	--	152	--	--	.60	--	--	--	--	--	--	--	--	--
June 25......	16			--	--						174	0	221	210	.2	3.2	--	774	270	127	--	1500	7.3	--	--	--
June 1-30....	104			--	--						86	0	173	90	.3	26	--	545	248	178	--	926	6.8	--	--	--
July 5.......	14			--	--						109	0	186	74	.5	13	--	480	263	173	--	825	6.8	--	--	--
July 25......	9.6			--	--						20	0	210	234	1.4	24	--	696	250	234	--	1520	5.9	--	--	--
July 28......	8.4			.11	.30						--	--	--	190	--	--	1.3	--	--	--	--	--	--	--	--	--
July 1-9, 13-31.........	17.4			--	--						3	0	196	154	1.1	65	--	624	259	256	--	1180	5.1	--	--	--
Aug. 7.......	262			--	--						54	0	45	22	.2	11	--	188	102	58	--	316	7.1	--	--	--
Aug. 15......	7.9			--	--			70	6.5		0	0	146	138	.3	71	--	504	214	214	A.6	979	4.5	-	--	--
Aug. 19......	10			.10	.29						--	--	--	--	--	--	1.3	--	--	--	--	--	--	--	5	6
Aug. 1-31....	31.0			--	--						62	0	148	83	.5	24	--	447	196	145	--	780	6.5	--	--	--
Sept. 6......	15			--	--						83	0	127	102	.3	32	--	484	234	166	--	820	7.7	--	--	--
Sept. 26.....	6.3			--	--						34	0	212	172	1.0	7.2	--	590	262	234	--	1240	7.1	--	--	--
Sept. 1-30...	13.1			--	--						73	0	172	134	.3	13	--	515	233	17[illegible]	--	105[illegible]	[illegible]	-	--	--

A Total acidity.

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2005. BLACK RIVER AT ELYRIA, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Cyanide (CN)	Turbidity	Threshold[a] odor
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 22, 1964	5.8	53		0.9				40	M-8
Nov. 19	3.6	32		.8				15	Ch-4
Dec. 14	8.2	61		.9				35	M-4
Jan. 27, 1965	8.6	62		.1				110	C-2
Mar. 3	10.4	75		.1				130	E-1
Apr. 14	7.4	68		.2				140	M-4
May 25	5.4	64		.3				10	Ch-8
June 23	3.2	39		.5				--	M-16
July 28	1.4	16		.4				--	Mm-16
Aug. 19	1.9	23		.3				35	M-16

a The dilution ratio at which odor is just detectable; M-musty, Ch-hydrocarbon, C-chemical, E-earthy, Mm-moldy.

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2005. BLACK RIVER AT ELYRIA, OHIO--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement between 1200 and 1500)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	1260	1940	1490	1280	705	--	452	--	686	946	889	851
2.....	1360	1620	1400	973	705	--	492	--	506	944	880	851
3.....	1720	1810	1370	600	--	--	494	674	501	927	740	855
4.....	1660	2070	1710	933	--	--	521	642	693	953	778	945
5.....	1640	1970	1090	630	--	--	607	701	640	825	766	933
6.....	1610	1850	1020	644	--	464	601	699	603	825	806	820
7.....	1450	1840	1100	693	--	454	603	711	599	870	316	1040
8.....	1480	1830	1250	665	--	462	595	716	599	1230	371	1050
9.....	1500	1700	1230	644	--	466	633	771	693	1240	370	1140
10.....	1620	1580	1130	605	546	458	644	737	953	--	469	1060
11.....	1910	1670	1310	629	457	453	1150	827	748	--	500	1010
12.....	2110	1730	1140	779	416	480	732	846	776	--	642	1050
13.....	2040	1640	1070	760	416	474	451	804	741	1180	713	1130
14.....	2120	1620	1110	858	422	511	511	835	908	1230	771	1040
15.....	1980	1530	1290	822	424	513	581	856	938	1130	979	1090
16.....	973	1400	1370	807	522	555	585	757	--	1160	801	976
17.....	1060	1440	1430	820	525	561	605	837	960	1160	846	1010
18.....	1130	1430	1430	822	--	577	578	856	1100	1230	848	1090
19.....	1190	1820	1540	852	--	588	582	865	1080	1230	929	1080
20.....	1330	1550	1430	896	--	637	609	910	1070	1300	902	830
21.....	1170	1640	1440	908	--	637	667	877	1220	1290	973	820
22.....	1320	1640	1460	788	--	639	690	877	1230	1230	953	968
23.....	1350	1440	1360	725	--	689	722	943	1260	1230	973	1190
24.....	1510	1200	1470	402	--	693	720	950	1090	1500	895	1010
25.....	1550	1250	1070	289	--	758	718	953	1500	1520	805	1190
26.....	1560	1310	1020	401	--	753	736	968	1180	1390	915	1240
27.....	1590	1360	1000	404	--	673	723	636	798	1370	918	1240
28.....	1710	1380	1120	473	--	670	689	588	1480	1340	800	1240
29.....	1690	1340	1160	499	--	636	641	548	1190	1210	794	1170
30.....	1830	1470	1280	528	--	470	642	679	796	1210	882	1160
31.....	1950	--	1280	617	--	451	--	674	--	1070	793	--
Average	1560	1600	1280	701	--	566	632	783	915	1170	774	1040

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2005. BLACK RIVER AT ELYRIA, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 1200 and 1500)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	68	68	67	67	65	64	65	64	64	64	63	63	61	60	58	58	58	58	58	57	57	57	57	57	56	55	55	54	54	54	54	60
November	55	54	54	54	54	54	54	54	54	54	54	54	54	54	53	53	53	53	53	54	53	52	52	49	47	47	46	46	46	46	--	52
December	45	44	42	42	42	42	41	41	41	40	40	40	40	40	40	40	40	40	39	38	38	37	37	37	37	37	36	36	36	37	37	39
January	37	37	38	37	36	36	36	35	35	35	35	35	35	35	34	34	34	34	33	33	33	33	33	33	33	33	33	33	33	33	33	34
February	33	33	--	--	--	--	--	--	--	34	33	33	33	33	33	34	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
March	--	--	--	--	--	33	33	33	34	34	35	36	36	37	37	38	38	40	37	35	35	35	36	36	37	37	38	40	40	40	40	37
April	40	40	40	38	40	48	52	53	54	54	56	56	53	53	51	49	49	45	45	49	51	52	53	53	54	52	50	50	54	57	--	50
May	--	--	59	59	63	70	71	72	72	72	71	72	72	72	70	72	71	72	73	73	72	72	72	72	72	73	71	68	63	68	71	70
June	70	68	69	65	64	70	72	71	72	72	71	72	70	69	70	--	70	70	72	72	72	72	72	72	74	76	76	77	77	75	--	71
July	75	73	75	75	76	76	77	76	75	--	--	--	74	75	75	76	75	75	76	77	76	76	76	76	76	75	75	76	76	76	76	76
August	74	73	75	75	76	76	74	74	74	74	73	74	76	75	76	76	74	75	76	76	76	74	74	75	75	75	75	75	74	73	72	75
September	72	73	73	74	73	73	72	72	72	72	71	70	70	70	70	70	70	72	72	72	72	72	72	71	70	70	69	70	70	70	--	71

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2080. CUYAHOGA RIVER AT INDEPENDENCE, OHIO

LOCATION.--At gaging station on right bank 140 feet downstream from highway bridge on Rockside Road, 1 mile northeast of Independence, Cuyahoga County, and 3 miles downstream from Tinkers Creek.
DRAINAGE AREA (revised).--707 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1949, July to September 1965.
Water temperatures: October 1948 to September 1949, October 1952 to September 1965.
Sediment records: October 1950 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 82°F Aug. 16; minimum, freezing point Jan. 8, 9, Feb. 10, 11.
Sediment concentrations: Maximum daily, 1,350 ppm July 3; minimum daily, 10 ppm July 30, 31.
Sediment loads: Maximum daily, 14,600 tons Jan. 24; minimum daily, 2 tons July 31.
EXTREMES, 1948-49, 1950-65.--Water temperatures (1948-49, 1952-65): Maximum, 88°F Aug. 18, 1949; minimum, freezing point on many days during winter months.
Sediment concentrations (1950-65): Maximum daily, 4,800 ppm Aug. 21, 1960; minimum daily, 1 ppm Sept. 4, 10, 1955.
Sediment loads (1950-65): Maximum daily, 51,400 tons Mar. 5, 1964; minimum daily, less than 0.50 ton on several days during August and September 1954, and September 1955.
REMARKS.--Thermograph discontinued June 30, digital recorder installed in gage house June 29, 1965 to record maximum and minimum daily specific conductance, dissolved oxygen and temperatures. Diurnal fluctuations caused by powerplants above station. Water diverted into Ohio Canal at Brecksville, 6 miles upstream from station, bypasses station.

Specific conductance, dissolved oxygen, temperatures, July to September 1965

Day	JUNE								JULY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..									1080	800			7.0	4.1	75	70
2..									1220	1040			5.0	3.7	74	71
3..									1180	370			5.9	3.4	73	66
4..									950	890			5.0	4.3	75	69
5..									1100	870			4.9	4.1	77	72
6..									1280	1080			5.5	3.8	77	71
7..									1310	1080			5.5	3.6	76	73
8..									1250	1020			4.9	3.0	76	72
9..									1260	510			5.0	2.9	77	72
10..									990	510			5.3	2.5	76	71
11..									740	700			4.9	3.6	76	70
12..									1010	700			5.6	4.5	75	70
13..									1140	960			5.6	3.8	77	71
14..									1240	1060			4.5	3.2	77	74
15..									1500	950			4.2	2.6	79	73
16..									1500	1370			5.1	3.0	78	73
17..									1390	1260			5.4	2.5	78	75
18..									1410	1180			5.9	2.2	78	75
19..									1360	1250			6.1	3.8	76	73
20..									1310	1160			6.9	3.0	74	69
21..									1380	1200			6.8	3.5	74	68
22..									1350	1200			6.0	2.1	73	70
23..									1500	1160			5.6	1.8	76	72
24..									1500	1290			5.4	2.0	78	74
25..									1330	1190			5.7	2.3	80	76
26..									1300	1160			5.2	2.8	79	74
27..									1220	1060			6.0	2.6	78	75
28..									1460	1200			5.9	2.6	76	73
29..									1500	1320			4.8	2.8	74	71
30..									1500	1270			5.3	2.3	72	69
31..									1500	1320			5.3	2.9	73	68

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2080. CUYAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

Specific conductance, dissolved oxygen, temperatures, July to September 1965--Continued

Day	AUGUST								SEPTEMBER							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	>1500	950			5.7	2.1	72	69	1080	640			3.6	2.1	68	66
2..	1390	280			6.7	3.8	70	63	1030	710			3.9	2.0	68	65
3..	740	520			5.1	3.5	69	63	880	710			3.7	2.9	69	64
4..	1270	740			3.7	3.4	69	66	1190	880			3.5	2.8	72	67
5..	1310	1150			3.6	3.1	72	64	1290	720			4.7	2.4	72	68
6..	1300	380			4.7	2.4	76	70	1050	750			5.2	4.6	72	68
7..	1010	530			4.0	2.7	76	70	940	770			5.8	4.3	72	68
8..	1220	1010			2.9	2.2	75	73	980	790			5.2	3.9	73	70
9..	1220	900			2.5	1.1	76	73	1080	920			5.0	4.1	75	70
10..	950	830			2.1	1.7	75	69	1200	1020			4.9	2.9	77	73
11..	1170	950			2.4	1.7	72	67	--	--			--	--	--	--
12..	1390	1070			1.9	1.5	74	69	--	--			--	--	--	--
13..	1440	1190			1.6	.9	75	72	--	--			--	--	--	--
14..	1330	1200			1.6	1.0	79	74	--	--			--	--	--	--
15..	1270	1130			1.2	.9	81	77	--	--			--	--	--	--
16..	1300	1210			1.5	.8	82	78	--	--			--	--	--	--
17..	1230	1130			1.5	.5	81	78	--	--			--	--	--	--
18..	1500	1140			2.8	.8	80	76	--	--			--	--	--	--
19..	1500	1210			3.2	1.9	79	75	--	--			--	--	--	--
20..	1210	1140			3.1	1.6	75	72	1200	1110			4.2	2.3	80	78
21..	1230	1120			3.2	1.4	72	69	1110	870			4.6	2.6	80	76
22..	1270	1120			3.0	1.9	72	69	1110	870			4.4	2.1	79	77
23..	1220	850			3.5	2.7	72	68	1530	1060			4.0	2.4	79	75
24..	1200	1090			3.4	2.3	71	67	1150	920			4.1	3.5	75	68
25..	1230	900			3.4	1.8	70	68	1070	830			5.5	3.8	68	66
26..	1070	690			3.4	1.9	73	67	1020	980			5.4	4.4	68	64
27..	1030	730			2.4	2.0	75	71	1070	950			5.6	4.4	68	64
28..	1060	810			2.6	1.8	75	68	1010	950			5.8	4.5	66	62
29..	1050	970			3.3	2.4	68	64	1150	960			5.3	3.8	68	64
30..	1090	1040			3.1	2.6	68	65	1120	1040			4.8	1.7	69	66
31..	1100	960			2.8	2.0	67	66	--	--			--	--	--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2080. CUYAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

Temperature (°F) of water, October 1964 to June 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	59	58	58	58	58	58	59	59	58	59	58	58	57	57	57	56	55	56	56	57	56	56	56	57	55	54	54	53	54	54	54	57
Minimum	57	57	58	57	58	57	57	57	57	58	57	57	56	56	56	54	54	55	56	56	55	55	56	55	53	52	53	52	53	53	52	55
November																																
Maximum	54	53	53	53	51	52	51	50	51	49	48	47	46	46	47	45	44	44	44	43	44	44	43	42	41	40	39	38	38	39	--	46
Minimum	52	52	52	51	50	51	50	50	49	48	45	45	45	45	45	43	43	44	43	43	43	43	41	41	40	38	38	37	36	38	--	45
December																																
Maximum	38	38	38	38	38	38	38	38	38	38	38	36	36	37	38	38	36	38	38	38	37	37	37	35	35	34	35	35	36	34	34	37
Minimum	38	38	38	38	38	38	38	38	38	38	36	36	36	36	37	36	36	36	38	37	37	37	35	33	33	34	34	35	34	33	33	36
January																																
Maximum	36	36	36	36	36	36	35	34	35	35	36	36	35	37	38	38	38	38	38	38	36	35	35	35	35	35	36	37	38	39	39	36
Minimum	34	34	35	35	36	35	34	32	32	35	35	35	35	35	37	38	38	38	38	36	35	35	35	34	34	34	34	36	37	38	38	35
February																																
Maximum	38	38	38	38	38	36	34	35	36	35	34	34	36	37	37	36	37	36	38	39	38	39	40	40	39	40	40	38	--	--	--	37
Minimum	38	38	38	38	36	33	33	34	35	32	32	34	34	36	35	36	36	36	36	38	37	37	39	39	38	39	38	37	--	--	--	36
March																																
Maximum	37	37	37	37	39	39	39	39	39	39	39	39	40	39	39	40	40	40	41	43	43	43	42	43	43	43	44	43	43	44	45	41
Minimum	35	36	37	37	37	39	39	39	39	39	39	38	39	39	39	39	40	40	40	41	43	41	42	42	43	43	43	42	42	43	44	40
April																																
Maximum	44	44	46	45	45	45	44	45	47	48	48	48	50	51	51	53	54	55	56	56	57	57	58	59	60	60	62	63	62	62	--	52
Minimum	44	44	44	44	43	43	43	43	45	46	46	47	48	50	51	51	53	54	54	55	55	56	57	58	59	60	60	61	60	60	--	51
May																																
Maximum	63	64	64	65	66	65	67	72	74	74	71	67	67	68	69	71	70	68	70	70	69	72	72	68	70	74	74	74	70	67	69	69
Minimum	61	62	63	64	65	64	64	67	70	70	67	65	64	65	66	68	66	65	67	66	65	67	68	66	66	69	70	70	67	66	66	66
June																																
Maximum	69	67	69	71	72	75	75	72	74	75	75	75	75	72	71	71	71	71	72	73	74	76	76	76	75	72	78	78	77	77	--	73
Minimum	67	66	67	67	68	72	72	71	71	71	72	72	71	68	67	67	69	68	68	70	72	72	76	74	70	69	70	72	74	74	--	70

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2080. CUYAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

Suspended sediment, water year October 1964 to September 1966
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	114	16	5	118	30	10	164	30	B 13
2..	127	21	7	106	30	9	162	30	B 13
3..	183	--	30	122	30	10	162	30	B 13
4..	104	17	B 5	112	26	8	442	--	210
5..	89	15	B 4	110	25	7	691	--	400
6..	109	14	B 4	109	25	7	321	--	35
7..	130	18	B 6	99	25	7	225	--	18
8..	112	17	B 5	100	25	7	212	--	17
9..	106	25	B 7	92	25	6	191	--	15
10..	124	30	10	106	25	7	164	--	13
11..	98	30	8	108	25	7	428	--	180
12..	82	30	7	106	25	7	952	--	600
13..	98	31	8	112	25	8	572	--	140
14..	99	20	5	114	25	8	481	--	85
15..	90	15	4	108	25	7	354	--	50
16..	86	15	3	108	25	7	300	--	35
17..	85	15	3	142	70	A 25	289	--	30
18..	87	18	4	114	25	B 8	272	--	30
19..	136	20	7	115	25	B 8	222	--	20
20..	132	21	7	175	--	20	184	--	17
21..	129	21	7	134	25	B 9	160	--	15
22..	118	22	7	108	25	B 7	184	--	17
23..	140	24	9	95	25	B 6	215	--	20
24..	130	26	9	109	25	B 7	188	--	18
25..	117	33	10	120	25	B 8	749	--	1000
26..	103	37	10	218	50	A 30	796	--	420
27..	115	37	11	136	30	B 11	664	--	130
28..	112	37	11	130	30	B 10	495	--	35
29..	220	--	50	162	30	B 13	425	--	30
30..	229	--	30	134	30	B 11	402	--	30
31..	143	30	B 12	--	--	--	395	--	30
Total	3747	--	305	3622	--	295	11461	--	3679

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1..	330	--	25	850	73	168	2080	308	1730
2..	2360	--	7400	700	92	174	2270	331	2030
3..	1790	--	2600	600	74	120	2200	192	1140
4..	1200	--	310	500	40	54	2050	141	780
5..	824	--	180	450	58	70	2870	374	2900
6..	481	75	97	498	110	A 150	2470	177	1180
7..	600	61	99	909	550	A 1300	2360	110	701
8..	1840	402	S 2170	1520	500	A 2100	2450	104	688
9..	2100	317	1800	1400	201	760	2530	128	874
10..	1540	180	748	1910	370	1910	2370	143	915
11..	1140	113	348	1780	121	582	1960	179	947
12..	890	60	144	3660	750	A 7400	1690	98	447
13..	800	53	114	2590	295	2060	1440	91	354
14..	684	47	87	1880	184	934	1320	68	242
15..	534	36	52	1470	126	500	1220	50	165
16..	432	30	35	1140	117	360	1170	73	231
17..	360	29	28	1030	104	289	1160	74	232
18..	330	32	28	849	78	179	1280	63	218
19..	354	33	32	736	60	119	1030	62	172
20..	280	45	34	600	49	79	867	61	143
21..	258	35	24	582	36	56	780	60	126
22..	328	111	S 138	523	36	51	784	63	133
23..	3030	772	S 7280	442	39	47	916	--	160
24..	6570	825	14600	425	40	46	1120	--	170
25..	4890	425	5610	2190	488	S 3270	1080	--	135
26..	3590	301	2920	1620	114	499	1080	--	120
27..	3230	264	2300	1380	103	384	1060	--	130
28..	2700	212	1540	1420	172	659	1300	--	290
29..	2350	236	1500	--	--	--	1650	--	350
30..	2000	48	259	--	--	--	1280	--	130
31..	1300	60	211	--	--	--	1090	--	100
Total	49115	--	52713	33654	--	24320	48927	--	17933

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2080. CUYAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	APRIL Mean discharge (cfs)	APRIL Suspended sediment Mean concentration (ppm)	APRIL Suspended sediment Tons per day	MAY Mean discharge (cfs)	MAY Suspended sediment Mean concentration (ppm)	MAY Suspended sediment Tons per day	JUNE Mean discharge (cfs)	JUNE Suspended sediment Mean concentration (ppm)	JUNE Suspended sediment Tons per day
1..	1000	--	110	422	25	28	281	745	S 1100
2..	1360	--	350	389	24	25	892	1000	A 2400
3..	1180	--	120	366	24	24	772	275	573
4..	1020	--	100	382	24	25	478	80	103
5..	876	--	95	330	28	25	360	51	50
6..				330	130	A 120	303	35	29
7..	824	--	70	405	400	A 440	315	70	60
8..	858	--	60	289	50	39	363	116	114
9..	792	--	50	253	25	17	360	38	37
10..	660	--	40	312	31	26	351	34	32
11..	593	--	35	330	41	37	272	35	26
12..	1040	--	2800	264	27	19	240	33	21
13..	708	70	A 130	264	18	13	200	27	15
14..	582	50	79	264	18	13	158	30	13
15..	582	54	85	245	19	13	151	32	13
16..	732	53	105	210	17	10	136	40	15
17..	692	53	99	280	46	35	132	35	12
18..	1000	--	320	269	23	17	143	27	10
19..	1030	80	A 220	230	16	10	127	25	9
20..	840	64	145	202	15	8	115	24	7
21..	744	41	82	175	15	7	99	22	6
22..	680	24	44	166	17	8	115	21	7
23..	680	23	42	153	22	9	127	18	6
24..	616	25	42	142	20	8	160	22	10
25..	579	25	39	158	12	5	124	15	5
26..	680	35	64	166	19	8	110	15	4
27..	608	49	80	418	220	A 250	100	17	5
28..	551	55	82	258	75	B 50	95	19	5
29..	509	49	67	191	41	21	264	--	65
30..	456	33	41	160	26	11	158	30	13
31..	--	--	--	138	27	10	--	--	--
Total	23308	--	5686	8161	--	1331	7501	--	4765

Day	JULY Mean discharge (cfs)	JULY Suspended sediment Mean concentration (ppm)	JULY Suspended sediment Tons per day	AUGUST Mean discharge (cfs)	AUGUST Suspended sediment Mean concentration (ppm)	AUGUST Suspended sediment Tons per day	SEPTEMBER Mean discharge (cfs)	SEPTEMBER Suspended sediment Mean concentration (ppm)	SEPTEMBER Suspended sediment Tons per day
1..	122	15	5	140	--	20	565	390	A 600
2..	117	18	6	1290	--	6000	324	111	S 119
3..	403	1350	S 2060	323	101	88	193	41	21
4..	140	119	45	166	71	32	169	34	16
5..	98	65	17	158	37	16	230	67	S 50
6..	109	39	11	561	--	2500	264	--	55
7..	100	21	6	401	--	400	166	18	8
8..	118	22	7	264	--	45	162	23	10
9..	217	--	550	345	--	85	138	29	11
10..	300	--	320	210	15	9	143	27	10
11..	200	85	A 45	162	16	7	184	--	40
12..	130	44	15	134	14	6	169	52	24
13..	110	36	11	122	20	7	169	35	16
14..	100	31	8	117	24	8	258	--	900
15..	100	41	11	108	28	8	250	370	A 250
16..	100	20	5	95	42	11	151	71	29
17..	100	15	4	117	31	10	132	37	13
18..	110	18	5	126	19	6	138	17	6
19..	100	18	5	112	16	5	120	15	5
20..	95	18	5	108	14	4	181	--	45
21..	100	20	5	108	14	4	129	28	10
22..	106	16	5	118	--	11	118	18	6
23..	103	20	6	177	--	45	198	--	35
24..	103	24	7	126	32	11	188	30	A 15
25..	112	23	7	126	27	S 10	193	17	9
26..	84	19	4	330	--	160	175	19	9
27..	100	16	4	186	--	30	151	21	9
28..	109	13	4	153	31	13	120	15	5
29..	104	11	3	115	16	5	110	12	4
30..	93	10	3	95	15	4	115	13	4
31..	92	10	2	147	41	S 23	--	--	--
Total	3975	--	3191	6740	--	9583	5603	--	2334

Total discharge for year (cfs-days).. 205814
Total load for year (tons).. 126135

S Computed by subdividing day.
A Computed from partly estimated-concentration graph.
B Computed from estimated-concentration graph.

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2080. CUYAHOGA RIVER AT INDEPENDENCE, OHIO--Continued

Particle-size analyses of suspended sediment, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Feb. 12, 1965	1520			4170	764		28	40	51	65	80	88	92	96	100			SBWC
Feb. 12	1520			4170	764		13	20	31	46	71	76	92	93	100			SBN
June 1	1800			382	2670		38	50	63	78	91	96	100	--	--			SBWC
June 1	1800			382	2670		19	28	43	62	80	86	97	99	100			SBN
July 3	0730			804	3280		39	54	70	83	92	99	99	100	--			SBWC

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2085.05. CUYAHOGA RIVER AT DUPONT INTAKE IN CLEVELAND, OHIO

LOCATION.--At east side of turning basin at station 722, 5.1 miles upstream from mouth in Cleveland, Cuyahoga County.
DRAINAGE AREA.--813 square miles at mouth.
RECORDS AVAILABLE.--Chemical analyses (conductance recorder only): October 1964 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 1,840 micromhos Nov. 5; minimum daily, 470 micromhos Jan. 24, 25.
REMARKS.--Recorder located in brick building at edge of turning basin.

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965

Day	OCTOBER								NOVEMBER							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	--	--							--	--						
2..	--	--							1270	1220						
3..	--	--							1450	1270						
4..	--	--							1490	1440						
5..	--	--							1840	1450						
6..	--	--							1730	1580						
7..	--	--							1770	1720						
8..	--	--							1710	1470						
9..	--	--							1470	1350						
10..	--	--							1420	1350						
11..	--	--							1500	1420						
12..	--	--							1520	1450						
13..	--	--							1540	1450						
14..	--	--							1630	1170						
15..	--	--							1630	1170						
16..	--	--							1630	1170						
17..	--	--							1630	1170						
18..	--	--							1630	1170						
19..	--	--							1630	1170						
20..	1360	1280							1480	1260						
21..	1480	1360							1450	1260						
22..	1590	1430							1450	1390						
23..	1530	1330							1420	1200						
24..	1460	1330							1500	1340						
25..	1460	1390							1580	1500						
26..	1400	1360							1540	1270						
27..	--	--							1500	1270						
28..	--	--							1500	1270						
29..	--	--							1500	1270						
30..	--	--							1500	1270						
31..	--	--							--	--						

Day	DECEMBER								JANUARY							
1..	1500	1270							1130	1070						
2..	1510	1420							1080	660						
3..	1620	1480							700	590						
4..	1680	1430							750	670						
5..	1530	1280							850	750						
6..	1440	1230							880	820						
7..	1230	1160							960	870						
8..	1400	1220							900	640						
9..	1530	1400							660	550						
10..	1670	1520							620	550						
11..	1730	1270							660	580						
12..	1280	710							760	640						
13..	1280	710							840	760						
14..	1280	710							940	780						
15..	1280	710							1000	910						
16..	1280	710							1080	960						
17..	1280	710							1080	960						
18..	1280	710							1110	960						
19..	1280	710							1200	1070						
20..	1280	710							1180	1110						
21..	1270	1010							1470	1180						
22..	1440	1270							1770	1450						
23..	1510	1430							1780	640						
24..	1520	1400							1160	470						
25..	1420	870							710	470						
26..	990	860							620	530						
27..	930	840							830	500						
28..	940	870							660	580						
29..	1150	930							720	600						
30..	1150	1080							740	620						
31..	1170	1100							780	660						

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2085.05. CUYAHOGA RIVER AT DUPONT INTAKE IN CLEVELAND, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965--Continued

FEBRUARY								MARCH							
Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
770	660							880	680						
890	770							690	590						
1060	850							700	580						
1090	1020							670	610						
1130	1020							730	580						
1240	1120							720	630						
1430	1080							790	650						
1080	800							670	600						
840	780							660	580						
830	710							710	570						
750	670							750	670						
720	500							760	700						
690	520							750	670						
580	550							740	630						
670	550							760	640						
740	670							850	730						
810	720							890	820						
880	800							890	780						
930	840							970	770						
1000	900							980	830						
1100	970							940	820						
1080	1020							970	820						
1120	1000							1040	910						
1250	1100							1100	880						
1340	780							1100	970						
830	750							1030	910						
880	780							950	890						
950	830							--	--						
--	--							800	660						
--	--							800	700						
--	--							850	770						

APRIL								MAY							
920	800							1220	1070						
880	760							1220	1030						
860	760							1060	950						
800	700							1120	1020						
760	680							1150	1100						
880	760							1200	1100						
940	850							1200	980						
950	850							1340	1030						
940	830							1340	1030						
980	850							1340	1030						
890	770							1340	1030						
820	650							1340	1030						
930	730							1340	1030						
1040	930							1340	1030						
1040	950							1340	1030						
1050	950							1340	1030						
960	850							1340	1030						
860	730							1530	1300						
770	670							1530	1300						
850	770							1530	1300						
970	850							1530	1300						
980	870							1530	1300						
970	880							1530	1300						
930	870							1510	930						
1030	890							1510	930						
960	850							1510	930						
960	870							1510	930						
1050	930							1510	930						
1040	990							1510	930						
1150	1010							1510	930						
--	--							1510	930						

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2085.05. CUYAHOGA RIVER AT DUPONT INTAKE IN CLEVELAND, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965--Continued

Day	JUNE								JULY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	1400	750							1210	1150						
2..	1400	750							1250	1210						
3..	1250	900							1240	750						
4..	1250	900							990	760						
5..	1250	900							1140	990						
6..	1250	900							1230	1140						
7..	1250	900							1300	1170						
8..	1220	1020							1290	1200						
9..	1220	1020							1230	1170						
10..	1220	1020							1170	850						
11..	1190	1120							1030	980						
12..	1240	1190							1040	1020						
13..	1240	1220							1050	1020						
14..	1240	1220							1150	1050						
15..	1330	1240							1290	1080						
16..	1380	1330							1290	1180						
17..	1380	1370							1470	1280						
18..	1400	1370							1490	1400						
19..	1400	1390							1460	1160						
20..	1400	1400							1310	1170						
21..	1400	1390							1350	1250						
22..	1470	1400							1430	1330						
23..	1450	1300							1430	1330						
24..	1300	1130							1430	1330						
25..	1360	1160							1430	1330						
26..	1400	1360							1530	1270						
27..	1400	1380							1530	1270						
28..	1380	1310							1530	1270						
29..	1470	1030							1530	1270						
30..	1150	1030							1530	1270						
31..	--	--							1630	1270						

Day	AUGUST								SEPTEMBER							
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	1630	1270							810	800						
2..	1300	570							1210	800						
3..	740	600							1210	800						
4..	980	720							1210	800						
5..	1170	930							1210	800						
6..	1380	1170							1210	800						
7..	1420	530							1210	800						
8..	1420	530							1150	1020						
9..	1420	530							1120	990						
10..	1420	530							1270	980						
11..	1220	1150							1280	1250						
12..	1370	1220							1260	1130						
13..	1520	1110							1200	1020						
14..	1520	1110							1270	1080						
15..	1520	1110							1370	750						
16..	1520	1110							1370	750						
17..	1520	1110							1090	850						
18..	1520	1110							1370	1040						
19..	1520	1110							1370	1040						
20..	1520	1110							1370	1210						
21..	1520	1110							1310	1200						
22..	1520	1110							1310	1250						
23..	1520	1110							1300	1220						
24..	1520	1110							1300	1140						
25..	1520	1110							1280	990						
26..	1520	1110							1380	1060						
27..	1210	1110							1070	900						
28..	1230	970							1170	1020						
29..	1020	950							1180	1160						
30..	1080	1020							1200	1160						
31..	1170	800							--	--						

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2085.1. CUYAHOGA RIVER AT CENTER STREET BRIDGE IN CLEVELAND, OHIO
(Formerly published as Cuyahoga River at Cleveland)

LOCATION.--At bridge on Center Street in Cleveland, Cuyahoga County, 0.8 mile upstream from mouth and 3.8 miles downstream from Kingsbury Run.
DRAINAGE AREA.--813 square miles at mouth.
RECORDS AVAILABLE.--Chemical analyses: October 1950 to February 1952, May 1964 to September 1965.
Water temperatures: March 1950 to February 1952, May 1964 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 1,600 micromhos Jan. 22-24; minimum daily, 330 micromhos Mar. 6.
Water temperatures: Maximum, 93°F Aug. 19; minimum, 38°F Feb. 4, 26, 27.
EXTREMES, 1950-52, 1964-65.--Specific conductance: Maximum daily, 1,600 micromhos Jan. 22-24, 1965; minimum daily, 256 micromhos Jan. 27, 1952.
Water temperatures: Maximum, 94°F July 22, 1964; minimum, 38°F Feb. 4, 26, 27, 1965.
REMARKS.--Recorder located in building under bridge gatekeeper's office at right end of bridge.

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965

Day	OCTOBER								NOVEMBER							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	1310	650	--	--	1.2	1.0	--	--	1400	1250	6.3	6.2	0.1	0.0	75	70
2..	1380	750	--	--	--	--	--	--	1270	1000	6.4	6.3	1.1	.0	74	68
3..	1360	920	--	--	--	--	--	--	1230	1070	6.3	6.2	1.7	.8	76	70
4..	1330	820	--	--	--	--	--	--	1150	1000	--	--	--	1.1	76	72
5..	1290	870	--	--	--	--	--	--	1060	910	6.3	6.2	--	--	74	70
6..	1080	720	--	--	--	--	--	--	1230	1050	6.2	6.1	--	--	76	71
7..	1170	710	--	--	--	--	--	--	1250	1100	6.2	6.1	--	--	76	70
8..	1240	730	--	--	--	--	--	--	1280	1100	6.2	6.1	--	--	75	69
9..	--	--	--	--	--	--	--	--	1300	1100	6.3	6.1	.9	.0	75	69
10..	--	--	--	--	--	--	--	--	1380	1130	6.4	6.1	1.2	.0	78	69
11..	--	--	--	--	--	--	--	--	1300	1100	6.4	6.2	1.0	.0	75	69
12..	--	--	--	--	--	--	--	--	1210	1090	6.5	6.3	2.1	.0	76	69
13..	--	--	--	--	--	--	--	--	1200	1000	6.6	6.4	2.0	.0	76	68
14..	--	--	--	--	--	--	--	--	1250	1050	6.6	6.3	3.0	.0	78	68
15..	--	--	--	--	--	--	--	--	1200	920	6.6	6.3	3.4	.1	76	66
16..	--	--	--	--	--	--	--	--	1100	1000	6.6	6.4	1.6	.1	75	68
17..	--	--	--	--	--	--	--	--	1250	1070	6.6	6.4	.7	.0	76	71
18..	--	--	--	--	--	--	--	--	1380	1230	6.7	6.5	1.6	.0	76	72
19..	1350	1000	6.2	6.0	--	--	78	73	1400	1050	6.8	6.6	1.9	.0	75	68
20..	1370	1050	6.2	6.0	1.9	.0	78	72	1470	1150	6.6	6.4	1.5	.0	75	67
21..	1350	900	6.3	6.0	1.2	.1	78	70	1400	1100	6.5	6.2	2.6	.0	74	64
22..	1300	950	6.2	6.1	2.4	.0	75	70	1400	1140	6.4	6.2	2.2	.0	70	61
23..	1300	1110	6.2	6.0	1.6	.0	75	72	1150	1100	6.3	6.2	--	--	65	62
24..	1360	1110	6.1	6.0	1.9	.0	74	69	1300	1100	6.5	6.3	.9	.0	68	60
25..	1350	1100	6.2	6.0	2.5	.1	74	68	1300	1250	6.5	6.4	.8	.0	68	63
26..	1350	1150	6.1	6.0	1.6	.0	76	70	1380	1280	6.6	6.4	.9	.0	71	66
27..	1250	1090	6.2	6.0	1.6	.0	74	69	1500	1290	6.5	6.4	.2	.0	70	66
28..	1300	1100	6.3	6.1	.6	.0	75	72	1500	1350	6.5	6.4	.6	.0	70	65
29..	1380	1050	6.3	6.2	.0	.0	77	69	1450	1280	6.5	6.4	.7	.0	69	64
30..	1420	1250	6.3	6.2	.0	.0	78	74	1450	1250	6.5	6.4	.3	.0	68	64
31..	1400	1200	6.4	6.2	.1	.0	76	70	--	--	--	--	--	--	--	--

Day	DECEMBER								JANUARY							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	1450	1350	6.5	6.4	0.2	0.0	69	66	1130	600	--	--	1.0	0.4	60	44
2..	1340	1200	6.5	6.4	.6	.0	68	64	1130	600	--	--	1.0	0.4	60	44
3..	1250	1180	6.7	6.5	.5	.0	68	64	1130	600	--	--	1.0	0.4	60	44
4..	1470	1220	6.6	6.4	.9	.0	68	64	700	610	--	--	.9	.6	46	45
5..	1500	1450	6.4	6.2	.2	.0	68	60	750	680	--	--	1.0	.6	48	45
6..	1450	1270	6.4	6.2	.7	.1	60	56	950	750	--	--	.9	.5	54	48
7..	1350	1260	6.5	6.4	1.3	.3	--	--	950	750	--	--	.9	.5	54	48
8..	1330	1250	6.6	6.5	1.2	.1	--	--	1000	640	--	--	1.0	.4	54	48
9..	1250	1190	6.7	6.5	.3	.0	--	--	1000	640	--	--	1.0	.4	54	48
10..	--	--	--	--	--	--	--	--	1000	640	--	--	1.0	.4	54	48
11..	--	--	--	--	--	--	--	--	670	650	--	--	.7	.4	49	48
12..	--	--	--	--	--	--	--	--	700	650	--	--	.8	.6	49	48
13..	--	--	--	--	--	--	--	--	800	700	--	--	.7	.4	50	48
14..	--	--	--	--	--	--	--	--	850	800	--	--	.7	.4	51	49
15..	1000	910	6.8	6.6	3.6	3.0	60	58	1000	660	--	--	.4	.0	50	47
16..	950	890	6.8	6.5	3.1	1.8	59	58	1000	660	--	--	.4	.0	50	47
17..	1090	940	6.6	6.4	2.1	.0	60	58	1000	660	--	--	.4	.0	50	47
18..	1150	1050	6.4	6.2	.7	.0	60	58	1030	990	--	--	.5	.3	48	48
19..	1200	1150	6.3	6.1	.4	.0	60	58	1030	1000	--	--	.4	.3	50	48
20..	1300	1200	--	--	.0	.0	60	58	1030	850	--	--	.7	.2	52	48
21..	1310	1240	6.4	6.4	--	--	62	56	--	--	--	--	--	--	--	--
22..	1320	1250	6.5	6.4	2.1	1.0	58	56	1600	490	7.3	6.1	--	--	56	40
23..	1290	1200	6.6	6.5	1.2	.6	60	58	1600	490	7.3	6.1	--	--	56	40
24..	1320	1200	6.6	6.4	1.0	.6	63	58	1600	490	7.3	6.1	--	--	56	40
25..	1450	1200	6.4	6.3	2.8	.6	66	58	550	500	7.0	6.7	--	--	40	40
26..	1230	900	6.8	6.4	2.8	2.2	63	54	560	530	6.8	6.6	--	--	43	40
27..	1000	880	--	--	2.2	.5	56	52	570	500	6.8	6.6	--	--	42	40
28..	960	870	--	--	.7	.5	56	55	550	500	6.7	6.5	--	--	41	40
29..	910	890	--	--	.7	.4	56	54	650	550	6.5	6.1	--	--	40	39
30..	950	900	--	--	.9	.6	57	55	650	550	6.5	6.1	--	--	40	39
31..	1000	950	--	--	.9	.6	58	57	700	650	6.5	6.3	--	--	40	39

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2085.1. CUYAHOGA RIVER AT CENTER STREET BRIDGE IN CLEVELAND, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatures, water year October 1964 to September 1965--Continued

Day	FEBRUARY								MARCH							
	Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhos at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	640	610	6.7	6.4	--	--	42	40	860	710	7.0	6.7	--	--	46	44
2	660	610	6.6	6.0	--	--	42	40	720	530	6.8	6.5	--	--	45	43
3	760	660	6.2	5.6	--	--	43	41	620	600	6.7	6.6	7.5	6.1	47	44
4	960	650	6.3	5.9	9.0	6.9	44	38	620	430	6.7	6.5	8.1	6.0	48	46
5	--	--	--	--	--	--	--	--	500	450	6.9	6.5	8.1	7.0	48	45
6	--	--	--	--	--	--	--	--	500	330	6.9	6.5	11.4	7.5	45	43
7	--	--	--	--	--	--	--	--	--	--	7.1	6.8	11.2	9.8	45	44
8	--	--	--	--	--	--	--	--	--	--	7.2	6.7	10.4	5.6	45	44
9	--	--	--	--	--	--	--	--	--	--	6.7	6.5	7.6	6.3	46	45
10	--	--	--	--	--	--	--	--	--	--	6.8	6.6	6.6	5.2	45	44
11	700	650	6.6	6.4	7.6	6.7	50	48	--	--	6.7	6.5	7.9	4.6	45	44
12	650	510	7.1	6.6	--	--	48	44	--	--	6.6	6.5	7.4	4.9	47	45
13	650	510	7.1	6.6	--	--	48	44	--	--	6.7	6.6	--	--	48	45
14	570	550	7.1	6.9	--	--	44	43	--	--	6.6	6.5	--	--	49	46
15	580	550	7.1	6.5	--	--	45	43	--	--	7.1	6.6	--	--	49	48
16	650	570	6.7	6.4	--	--	46	44	--	--	6.8	6.5	7.8	6.2	50	48
17	720	650	6.6	6.5	--	--	48	45	--	--	6.6	6.4	7.0	5.2	51	49
18	750	700	6.5	6.4	--	--	50	47	--	--	6.6	6.4	6.7	5.1	51	49
19	900	750	6.4	5.9	--	--	50	48	--	--	6.6	6.3	7.6	5.8	51	48
20	900	750	6.4	5.9	--	--	50	48	--	--	6.6	6.3	7.6	5.8	51	48
21	1000	900	6.6	6.3	--	--	50	48	--	--	6.6	6.3	7.6	5.8	51	48
22	1000	900	6.6	6.3	--	--	50	48	--	--	6.8	6.4	6.3	2.9	50	48
23	1050	1000	6.8	6.6	--	--	48	46	--	--	6.8	6.1	6.4	5.1	50	49
24	1050	1000	6.6	6.0	--	--	49	47	980	930	6.3	6.1	5.4	2.0	51	49
25	1250	800	6.6	5.9	--	--	51	40	1060	920	6.4	6.2	5.1	1.6	50	48
26	800	740	6.5	6.0	--	--	42	38	1060	860	6.4	6.2	5.5	3.2	51	49
27	800	740	6.5	6.0	--	--	42	38	1060	860	6.4	6.2	5.5	3.2	51	49
28	850	770	6.9	6.3	--	--	46	42	1060	860	6.4	6.2	5.5	3.2	51	49
29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30	--	--	--	--	--	--	--	--	690	660	6.6	6.4	--	--	51	49
31	--	--	--	--	--	--	--	--	720	660	6.5	6.3	--	--	52	49

Day	APRIL								MAY							
	Specific conductance Max	Specific conductance Min	pH Max	pH Min	Dissolved oxygen Max	Dissolved oxygen Min	Temperature Max	Temperature Min	Specific conductance Max	Specific conductance Min	pH Max	pH Min	Dissolved oxygen Max	Dissolved oxygen Min	Temperature Max	Temperature Min
1	770	720	6.4	6.3	5.2	4.3	53	51	1000	950	6.4	6.4	--	--	69	66
2	800	750	6.4	6.3	4.8	4.3	54	52	1050	900	6.4	6.3	--	--	72	64
3	780	730	6.5	6.3	4.7	3.6	52	51	1040	950	6.5	6.4	--	--	73	67
4	730	710	6.4	6.3	4.4	3.9	54	52	1020	850	6.6	6.4	--	--	75	68
5	730	660	7.0	6.3	4.0	3.2	56	53	990	850	6.6	6.5	--	--	77	70
6	730	690	7.0	6.3	3.4	2.1	60	55	1000	860	6.5	6.4	--	--	78	69
7	830	730	6.4	6.2	2.8	1.5	63	60	1000	780	6.5	6.2	--	--	80	67
8	940	820	6.2	6.1	1.5	.8	64	62	1000	780	6.5	6.2	--	--	80	67
9	950	920	6.3	6.1	1.5	.8	64	61	1000	780	6.5	6.2	--	--	80	67
10	1000	950	6.3	6.1	--	--	63	62	880	750	6.5	6.3	--	--	78	70
11	1040	1000	6.3	6.1	--	--	64	60	960	820	6.6	6.4	--	--	80	73
12	1020	800	6.8	6.2	.8	.6	64	58	960	800	6.4	6.2	1.2	0.2	78	75
13	800	700	6.7	6.5	--	--	62	58	--	--	6.3	6.1	2.8	.0	75	71
14	900	750	6.5	6.2	--	--	62	60	--	--	6.3	6.2	3.3	.0	78	69
15	980	900	6.2	6.2	--	--	63	61	1170	1040	6.4	6.3	1.4	.2	80	70
16	--	--	--	--	--	--	--	--	1230	1020	6.4	6.2	--	--	80	74
17	--	--	--	--	--	--	--	--	1180	980	6.4	6.2	--	--	80	72
18	--	--	--	--	--	--	--	--	1150	750	6.5	6.3	4.5	.8	81	72
19	670	520	7.2	7.0	--	--	54	53	1050	850	6.6	6.3	1.2	.0	80	70
20	680	600	7.1	6.5	--	--	57	53	1100	950	6.4	6.3	2.1	.0	78	74
21	--	--	6.4	6.3	--	--	61	57	1200	850	6.4	6.3	4.5	.0	81	70
22	850	780	6.3	6.1	--	--	62	60	1200	950	6.4	6.1	--	--	81	71
23	880	770	6.4	6.2	--	--	66	62	1200	950	6.4	6.1	--	--	81	71
24	880	770	6.4	6.2	--	--	66	62	1200	970	6.3	6.2	1.6	.4	80	72
25	880	770	6.4	6.2	--	--	66	62	1250	1000	6.5	6.2	1.7	.0	84	72
26	900	800	6.4	6.3	--	--	65	64	1220	910	6.5	6.3	1.6	.4	82	72
27	880	770	6.7	6.4	--	--	64	62	1190	1000	6.3	6.2	2.1	1.6	84	75
28	850	760	6.5	6.3	--	--	64	62	1100	900	6.4	6.2	2.0	.0	82	74
29	880	800	6.4	6.3	--	--	65	62	1170	860	6.5	6.3	5.4	.0	79	74
30	930	850	6.5	6.3	--	--	66	63	1170	860	6.5	6.3	5.4	.0	79	74
31	--	--	--	--	--	--	--	--	1170	860	6.5	6.3	5.4	.0	79	74

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2085.1. CUYAHOGA RIVER AT CENTER STREET BRIDGE IN CLEVELAND, OHIO--Continued

Specific conductance, pH, dissolved oxygen, and temperatnres, water year Octcher 1964 tc September 1965--Continued

Day	JUNE								JULY							
	Specific conductance (micromhce at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhce at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	1160	900	6.4	6.3	2.0	0.0	82	74	1110	950	6.8	6.7	0.3	0.1	86	82
2..	1240	800	6.3	6.2	2.0	.0	86	74	1080	910	6.8	6.6	.3	.1	87	81
3..	800	750	6.4	6.2	.7	.0	74	70	1160	1040	6.7	6.4	.3	.1	90	84
4..	840	800	6.4	6.3	--	--	72	70	1100	850	6.7	6.4	.3	.1	86	79
5..	900	840	6.3	6.1	--	--	75	68	1100	850	6.7	6.4	.3	.1	86	79
6..	850	800	6.2	6.1	--	--	78	72	900	820	6.8	6.7	.1	.0	82	79
7..	980	800	6.3	6.1	--	--	83	72	960	830	6.9	6.8	.3	.0	85	80
8..	960	860	6.3	6.2	--	--	82	75	1100	920	6.9	6.8	.2	.0	85	82
9..	950	880	6.4	6.3	--	--	83	76	1130	860	6.9	6.7	.3	.0	88	81
10..	1000	940	6.8	6.3	.3	.0	83	80	1150	1070	7.0	6.6	.3	.0	90	87
11..	1050	930	6.8	6.6	.2	.0	82	79	--	--	6.7	6.6	--	--	87	81
12..	1100	990	6.7	6.5	.0	.0	84	76	--	--	6.8	6.7	--	--	84	81
13..	1100	990	6.7	6.5	.0	.0	84	76	870	700	7.0	6.8	--	--	86	81
14..	1050	920	6.6	6.5	.0	.0	81	76	820	700	6.9	6.8	--	--	87	82
15..	1100	990	6.6	6.6	.0	.0	82	78	870	790	7.0	6.9	3.3	.0	91	82
16..	1130	1000	6.7	6.6	.2	.0	82	77	870	700	6.9	6.6	2.4	.0	90	81
17..	1150	1000	6.8	6.6	.2	.0	82	77	870	700	6.9	6.6	2.4	.0	90	81
18..	1210	900	6.7	6.5	.2	.0	84	73	830	760	6.9	6.8	3.0	1.6	90	82
19..	1210	1030	6.6	6.5	.4	.0	84	77	1000	800	6.9	6.8	3.0	.0	92	84
20..	1210	1030	6.6	6.5	.4	.0	84	77	930	850	6.8	6.7	--	--	88	82
21..	1100	970	6.7	6.5	.6	.2	82	79	900	820	6.9	6.7	--	--	87	82
22..	1100	960	6.7	6.6	2.0	.0	84	78	950	850	6.9	6.7	--	--	89	81
23..	1200	1010	6.8	6.7	1.8	.1	87	81	1020	770	7.0	6.6	--	--	91	81
24..	1260	980	6.8	6.7	.9	.0	90	80	1020	770	7.0	6.6	--	--	91	81
25..	1220	1030	6.8	6.7	.3	.0	88	79	910	830	6.8	6.2	--	--	90	82
26..	1100	980	7.0	6.6	.2	.0	85	80	970	800	6.9	6.7	--	--	90	82
27..	1070	950	7.0	6.7	.2	.0	86	81	1060	910	6.8	6.6	--	--	90	86
28..	1160	900	7.2	6.6	.4	.0	87	80	1090	950	6.8	6.6	--	--	91	85
29..	1190	1060	6.9	6.6	.4	.3	90	86	1110	940	6.9	6.3	.4	.0	90	84
30..	1120	1000	6.8	6.6	.3	.2	87	82	1100	950	6.8	6.6	.3	.0	89	84
31..	--	--	--	--	--	--	--	--	1180	1070	6.7	6.6	.1	.0	91	85

Day	AUGUST								SEPTEMBER							
	Specific conductance (micromhce at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)		Specific conductance (micromhce at 25°C)		pH		Dissolved oxygen (ppm)		Temperature (°F)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1..	1250	1130	6.7	6.6	0.0	0.0	92	84	1170	950	7.0	6.6	--	--	87	83
2..	1300	650	7.1	6.5	.0	.0	92	69	1170	1040	7.0	6.6	--	--	84	77
3..	690	570	7.1	6.9	.0	.0	71	68	1040	820	7.1	7.0	--	--	77	75
4..	680	570	7.0	6.7	.0	.0	72	69	870	820	7.1	7.0	--	--	78	75
5..	800	680	6.7	6.7	.0	.0	78	72	1030	870	7.0	6.8	--	--	82	78
6..	1100	800	6.7	6.5	.0	.0	81	76	1070	1000	--	--	--	--	85	81
7..	1190	820	6.8	6.4	.0	.0	88	78	1060	1000	--	--	--	--	83	81
8..	820	650	7.0	6.8	.0	.0	78	75	1060	900	6.0	4.4	--	--	83	78
9..	800	620	7.0	6.9	.0	.0	84	77	1010	930	7.0	5.0	--	--	85	80
10..	930	800	6.9	6.8	.0	.0	84	81	1030	920	7.1	5.7	0.4	0.0	86	81
11..	1050	900	6.9	6.7	.0	.0	85	80	1050	940	7.1	7.0	.5	.2	86	81
12..	1060	900	6.8	6.6	.0	.0	85	80	1150	990	--	--	.7	.2	87	81
13..	1100	950	6.7	6.4	.0	.0	90	81	1180	980	--	--	.3	.2	88	82
14..	1100	950	6.7	6.4	.0	.0	90	81	1050	930	--	--	.3	.1	86	80
15..	1130	950	6.5	6.4	.2	.0	90	86	1150	1000	--	--	.4	.2	87	81
16..	1050	900	6.5	6.4	.0	.0	90	84	1170	1030	--	--	.3	.1	85	79
17..	1100	1000	6.6	6.4	.0	.0	92	86	1070	900	--	--	.2	.1	81	77
18..	1140	990	6.7	6.5	.0	.0	92	87	900	840	--	--	.6	.0	83	78
19..	1120	890	6.7	6.5	.0	.0	93	85	1000	900	--	--	.6	.3	86	80
20..	1050	880	6.6	6.5	.0	.0	89	83	1100	900	6.6	6.4	.5	.0	88	82
21..	1150	1000	6.6	6.4	.0	.0	90	86	1150	920	6.9	6.5	1.3	.0	86	80
22..	1150	1000	6.6	6.4	.0	.0	90	84	1070	880	6.9	6.8	1.6	.0	86	78
23..	1210	1050	6.5	6.4	.0	.0	89	85	1180	870	6.9	6.7	1.5	.0	87	80
24..	1200	1050	6.6	6.4	.0	.0	89	85	1230	1000	6.7	6.5	.0	.0	87	80
25..	1150	1000	6.8	6.5	.0	.0	88	82	1230	1000	6.7	6.5	.0	.0	87	80
26..	1200	1020	6.8	6.5	.0	.0	90	85	1140	1000	6.6	6.5	.0	.0	82	76
27..	1210	1030	6.8	6.5	--	.0	90	84	1250	1120	6.6	6.4	.0	.0	81	78
28..	1240	1190	6.8	6.7	--	--	88	84	1250	1060	6.5	6.3	.8	.0	80	74
29..	1200	1050	6.8	6.7	--	--	84	81	1150	1000	6.7	6.5	.0	.0	78	73
30..	1090	890	7.0	6.7	--	--	83	78	1130	1030	6.7	6.6	.0	.0	78	75
31..	990	900	7.1	6.9	--	--	84	80	--	--	--	--	--	--	--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2122. GRAND RIVER AT PAINESVILLE, OHIO

LOCATION.--At bridge on State Highway 535 in Painesville, Lake County, 2.2 miles upstream from mouth, and 8 miles downstream from Kellogg Creek.
DRAINAGE AREA.--712 square miles (at mouth).
RECORDS AVAILABLE.--Chemical analyses: March 1950 to February 1952, October 1962 to September 1965.
Water temperatures: March 1950 to February 1952, October 1962 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 19,000 micromhos Sept. 2, 3; minimum daily, 600 micromhos Feb. 28.
Water temperatures: Maximum, 88°F July 18; minimum, freezing point Jan. 28, Feb. 4, and Mar. 13.
EXTREMES, 1950-52, 1962-65.--Specific conductance: Maximum daily, 30,300 micromhos July 14, 1964; minimum daily, 309 micromhos Dec. 8, 1950.
Water temperatures: Maximum, 89°F July 23, 29, 1964; minimum, freezing point on several days during winter months.
REMARKS.--Samples collected for iron and manganese filtered clear when collected. Values expressed in parts per million should be multiplied by the density, where given, when computing loads. Daily samples were collected at this station and samples were analyzed on the following basis: (1) Maximum daily specific conductance for each month, (2) minimum daily specific conductance for each month, (3) special sample each month to further define quality of water, and (4) composite analysis of all daily samples for each month. Diamond Alkali Company and Painesville Sewage Disposal Plant are located just above station. Records of discharge are given for Grand River near Madison.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Oxygen consumed: Filtered	Oxygen consumed: Unfiltered
Oct. 1, 1964..	6.6			--	--						42	127	3580	0.3	--	--	6610	3300	3260		10400	7.2		--	--
Oct. 20.......	12			--	--						29	151	6350	.3	--	--	10700	5700	5680		16600	6.6		--	--
Oct. 22.......	14			0.00	0.02						--	--	--	--	--	0.17	--	--	--		--	--		8	8
Oct. 1-31.....	9.66			--	--						38	139	5360	.3	--	--	9390	4800	4770		14700	6.7		--	--
Nov. 13.......	12			--	--						38	116	4200	.4	--	--	7340	3660	3630		11900	7.4		--	--
Nov. 19.......	12			.08	.26						--	--	--	--	--	.05	--	--	--		--	--		8	8
Nov. 25.......	32			--	--						16	143	6580	.5	--	--	11200	5860	5850		17600	6.0		--	--
Nov. 1-30.....	20.4			--	--						4	124	5390	.4	--	--	9130	4670	4670		14600	5.1		--	--
Dec. 1........	43			--	--						40	124	4940	.1	--	--	9020	4620	4590		15800	6.8		--	--
Dec. 14.......	900			.58	.40						--	--	--	--	--	.21	--	--	--		--	--		5	7
Dec. 28.......	32			--	--						82	68	380	.1	10	--	888	482	415		1430	7.4		--	--
Dec. 1-24, 26-31..........	44.3			--	--						68	104	2250	.1	--	--	4180	2140	2080		6870	7.2		--	--
Jan. 12, 1965.	1120			--	--						74	116	3520	.0	--	--	6920	3400	3340		10100	7.6		--	--
Jan. 27.......	4500			.32	.00						--	--	--	--	--	.24	--	--	--		--	--		3	6
Jan. 31.......	900			--	--						61	38	143	.1	3.6	--	462	209	159		672	7.4		--	--
Jan. 1-2, 12-25, 27-31...	1381			--	--						65	86	1320	.1	--	--	2850	1320	1270		4330	7.3		--	--
Feb. 6........	310			--	--						74	100	2200	.1	--	--	4490	2140	2080		6650	6.7		--	--
Feb. 28.......	4000			--	--						48	34	125	.1	2.8	--	430	172	133		600	6.9		--	--
Feb. 1-28.....	1702			--	--						58	56	950	.1	6.2	--	2000	930	882		3030	7.0		--	--

Mar. 4, 1965..	3840			.23	.00						38	37	174	.0	1.5	.20	550	219	188		716	7.5		4	5
Mar. 26.......	450			--	--						62	68	1220	.0	--	--	2820	1240	1190		3900	7.8		--	--
Mar. 1-31.....	2102			--	--						54	49	555	.0	3.2	--	1460	588	544		1950	7.5		--	--
Apr. 1........	1370			--	--						60	48	270	.2	3.4	--	816	326	277		1060	7.4		--	--
Apr. 15.......	570			.38	.34						--	--	--	--	--	.20	--	--	--		--	--		5	6
Apr. 26.......	374			--	--						74	68	1500	.2	--	--	3280	1400	1340		4550	7.4		--	--
Apr. 1-10, 12-30..........	758			--	--						67	64	850	.2	5.8	--	2130	828	773		2710	7.5		--	--
May 8.........	1790			--	--						92	60	446	.0	--	--	1170	523	447		1680	7.6		--	--
May 19........	250			--	--						77	92	3780	.1	--	--	6640	3540	3480		10400	6.9		--	--
May 25........	120			.10	.08						--	--	--	--	--	.20	--	--	--		--	--		7	7
May 1-31......	448			--	--						77	70	2350	.0	--	--	4190	2120	2060		6580	7.1		--	--
June 1........	175			--	--						60	33	440	.1	3.6	--	1100	469	420		1490	7.9		--	--
June 24.......	31			.05	.01						--	--	--	--	--	.10	--	--	--		--	--		--	--
June 25.......	32			--	--						90	72	4750	.1	--	--	9040	4340	4260		12100	7.6		--	--
June 1-30.....	326			--	--						68	68	2440	.1	--	--	4960	2240	2180		6980	7.5		--	--
July 1........	19			--	--						75	100	3300	.1	--	--	6170	3000	2940		8980	7.5		--	--
July 22.......	10			--	--						55	160	5570	.2	--	--	10100	4980	4930		14200	7.2		--	--
July 28.......	3.2			.09	.02						--	--	--	--	--	.36	--	--	--		--	--		--	--
July 1-31.....	18.2			--	--						44	100	4490	.1	--	--	8050	4090	4050		11800	7.2		--	--
Aug. 15.......	13			--	--						80	80	1750	.1	--	--	3510	1720	1650		5210	7.6		--	--
Aug. 16.......	11			--	--						48	120	5980	.2	--	--	10400	5440	5400		14600	6.3		--	--
Aug. 19.......	7.1			.02	.29						--	--	--	--	--	.21	--	--	--		--	--		6	6
Aug. 1-6, 10-31..........	14.7			--	--						28	100	4470	.0	--	--	7790	4040	4020		12000	6.3		--	--
Sept. 2.......	24			--	--						32	124	7220	.0	--	--	12300	6650	6620		19000	6.6		--	--
Sept. 9.......	19			--	--						150	115	1550	.2	--	--	3180	1520	1400		5230	7.5		--	--
Sept. 1-27, 29-30.......	15.4			--	--						44	97	4890	.1	--	--	8570	4480	4440		13900	6.7		--	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2122. GRAND RIVER AT PAINESVILLE, OHIO--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965
(Once-daily measurement between 0800 and 0930)

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	10400	16100	15800	5130	1020	1110	1060	3310	1490	8980	11800	15000
2.....	11100	16100	15800	5130	3330	1100	1810	5200	1930	9200	11400	19000
3.....	14000	15400	13500	--	--	724	1820	4610	2030	12300	12600	19000
4.....	999	14800	13500	--	5540	716	2210	7000	1510	10500	13500	13900
5.....	11800	15400	14000	--	3480	1220	2660	7140	3000	12300	13500	13900
6.....	13500	14200	14000	--	6650	943	2220	5690	2200	10500	13500	13400
7.....	14000	12300	7140	--	6540	1220	2840	2740	4840	10800	--	14400
8.....	11800	13700	6740	--	1060	963	4230	1680	2300	10800	--	13900
9.....	14000	12800	6740	--	5630	1070	2760	1680	3210	14200	--	5230
10.....	14600	13200	2180	--	1030	1170	4040	3080	4900	11500	10700	12000
11.....	14600	13200	7140	--	924	1090	--	3600	4320	11500	10700	13400
12.....	14600	12300	2060	10100	855	950	2560	3220	5580	11200	13500	13400
13.....	13500	11900	1820	3250	917	1080	1240	6870	4320	11900	11100	12900
14.....	14000	13700	2350	1520	1160	1420	1200	7140	5180	11900	5370	10000
15.....	13500	16100	1830	5780	1050	2230	1200	7140	7120	11500	5210	7680
16.....	14600	16100	2220	1570	1890	1970	2350	7280	4010	12300	14600	15700
17.....	15200	15400	5200	5690	1980	1960	2140	9580	7120	13100	14600	15700
18.....	14600	15400	5280	10100	3730	2230	2380	8270	8440	11900	12200	15700
19.....	15200	13200	5870	6740	3850	2170	2280	10400	9810	13600	12200	14400
20.....	16600	13200	5350	6740	1960	3330	3400	10100	9550	10200	10400	14400
21.....	15900	14800	6280	1630	4820	3360	3680	8460	9810	10800	10400	15700
22.....	15900	14800	8270	8270	4880	2200	2010	8460	10400	14200	12200	15700
23.....	14600	14800	6380	1410	3100	2170	2530	10100	10400	13600	11800	12900
24.....	16600	14800	8270	883	4750	3300	1980	10400	9810	12700	12200	12400
25.....	15900	17600	--	731	3100	3520	3500	10400	12100	11900	13000	12900
26.....	15200	14200	1690	--	4410	3900	4550	9580	12100	12700	12600	13400
27.....	14600	14200	1490	1760	663	3520	3470	8090	10400	13100	12200	12900
28.....	15200	16800	1430	8670	600	2330	4440	10100	10100	9940	11400	--
29.....	16600	14200	2910	3140	--	2470	3340	3600	10100	13100	11800	12900
30.....	14600	14200	2940	1080	--	3900	4440	--	10100	12700	13500	14400
31.....	15900	--	5060	672	--	1040	--	3280	--	12700	14000	--
Average	14000	14500	6440	--	2920	1950	2700	6610	6610	11860	11860	13660

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2122. GRAND RIVER AT PAINESVILLE, OHIO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Dissolved oxygen		Organics		Ammonia nitrogen as NH_4	Nitrite (NO_2)	Turbidity	Density at 20°C	Threshold[a] odor
	Parts per million	Percent saturation	Phenols as C_6H_5OH	Detergent (MBAS)					
Oct. 1, 1964	--	--		--			--	1.006	--
Oct. 20	--	--		--			--	1.009	--
Oct. 22	7.6	84		0.6			25	--	Cm-16
Oct. 1-31	--	--		--			--	1.008	--
Nov. 13	--	--		--			--	1.001	--
Nov. 19	7.7	83		.7			6	--	C-32
Nov. 25	--	--		--			--	1.005	--
Nov. 1-30	--	--		--			--	1.002	--
Dec. 1	--	--		--			--	1.003	--
Dec. 14	10.6	75		.2			150	--	Cm-8
Jan. 27, 1965	9.1	62		.1			130	--	Ch-8
Mar. 4	10.2	74		.1			95	--	M-1
Apr. 15	10.8	98		.1			75	--	Cm-8
May 25	8.2	96		.6			7	--	Cm-4
June 24	6.7	82		.5			--	--	Ch-4
June 25	--	--		--			--	1.000	--
July 22	--	--		--			--	1.004	--
July 28	5.9	80		.4			--	--	Cm-4
July 1-31	--	--		--			--	1.003	--
Aug. 16	--	--		--			--	1.004	--
Aug. 19	5.2	70		.5			2	--	Cm-8
Aug. 1-6, 10-31	--	--		--			--	1.003	--
Sept. 2	--	--		--			--	1.006	--
Sept. 1-27, 29-30	--	--		--			--	1.002	--

a The dilution ratio at which odor is just detectable; Cm-medicinal, C-chemical, Ch-hydrocarbon, M-musty.

STREAMS TRIBUTARY TO LAKE ERIE--Continued

4-2122. GRAND RIVER AT PAINESVILLE, OHIO--Continued

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement between 0800 and 0930)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	72	73	73	--	73	70	68	68	65	63	64	68	72	73	70	74	74	75	73	68	72	68	70	66	62	68	70	72	70	68	68	70
November	68	68	72	70	68	70	68	68	68	70	69	70	69	70	70	70	66	67	65	63	56	54	52	50	56	58	60	55	53	50	--	64
December	48	46	48	48	48	46	40	38	39	38	41	40	38	38	38	36	40	38	38	36	40	42	40	43	--	41	42	40	40	38	40	41
January	40	42	--	--	--	--	--	--	--	--	--	--	--	--	36	38	40	36	36	38	40	40	38	36	33	--	34	32	33	--	--	--
February	33	35	--	32	35	38	38	34	35	--	34	35	34	35	36	37	33	37	34	35	34	33	35	35	33	33	34	33	--	--	--	35
March	33	34	35	35	35	34	34	37	35	34	34	33	32	40	38	40	38	40	37	35	34	37	40	37	36	37	35	40	39	35	36	36
April	37	40	40	41	43	42	50	44	47	48	--	48	50	48	50	48	48	50	48	45	46	48	50	52	52	50	45	47	50	52	--	47
May	55	60	66	62	65	66	66	68	66	70	65	66	64	65	67	68	70	71	70	72	72	73	72	68	70	71	70	70	65	--	68	67
June	62	60	62	60	58	62	64	62	68	70	74	68	70	72	68	70	72	68	72	75	78	80	78	78	80	75	78	78	80	82	--	71
July	80	--	81	84	85	85	85	83	82	78	80	82	83	84	85	87	85	88	84	83	80	83	85	87	87	84	86	85	85	84	83	84
August	84	83	84	84	85	87	--	--	--	84	84	83	85	84	80	84	86	87	85	84	85	83	84	85	86	87	87	85	76	80	85	84
September	84	80	83	85	85	84	83	79	80	84	84	82	84	78	80	83	81	80	82	84	85	85	85	83	78	80	78	--	80	81	--	82

ST. LAWRENCE RIVER BASIN

STREAMS TRIBUTARY TO LAKE ONTARIO

4-2216. VAN CAMPEN CREEK AT FRIENDSHIP, N. Y.

LOCATION.--Temperature recorder at gaging station on left bank, 45 feet downstream from Moss St. bridge in village of Friendship, Allegany County.
DRAINAGE AREA.--45.8 square miles.
RECORDS AVAILABLE.--Water temperatures: February 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 73°F June 29, July 23, and Sept. 17; minimum, freezing point on many days during December to February.
EXTREMES, February 1964 to September 1965.--Water temperatures: Maximum, 81°F July 1, 1964; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	64	65	64	64	63	61	59	57	56	56	54	53	53	54	54	53	53	53	53	53	51	48	48	48	46	46	47	47	47	47	47	54
Minimum	63	64	63	62	61	59	57	55	56	54	53	51	52	52	53	51	53	52	53	51	48	48	48	46	44	45	46	47	47	46	45	52
November																																
Maximum	45	44	44	44	44	44	44	43	43	43	44	44	45	45	44	44	44	43	42	40	40	39	38	36	36	37	38	38	38	37	--	42
Minimum	43	43	43	43	43	44	43	43	42	42	43	43	44	44	42	42	43	42	38	39	37	37	35	35	35	35	37	37	37	35	--	40
December																																
Maximum	36	35	34	34	34	35	36	35	36	35	33	33	34	34	33	34	33	33	33	32	32	32	32	32	37	36	37	36	36	34	35	34
Minimum	35	34	34	34	34	34	34	34	34	33	32	32	33	33	32	32	32	32	32	32	32	32	32	32	32	36	36	35	34	34	34	33
January																																
Maximum	36	34	35	34	35	33	34	34	34	34	35	35	34	34	33	34	33	33	33	33	33	33	33	33	32	32	33	33	34	34	34	34
Minimum	33	32	32	32	32	33	32	32	32	34	33	32	33	32	32	32	32	32	32	32	33	33	32	32	32	32	32	32	33	33	32	32
February																																
Maximum	32	32	32	33	32	33	33	34	35	35	35	35	36	36	35	35	35	34	35	35	35	35	35	35	34	35	35	34	--	--	--	34
Minimum	32	32	32	32	32	32	32	32	34	34	35	35	35	34	33	33	33	34	34	33	34	34	33	34	32	33	33	33	--	--	--	33
March																																
Maximum	34	34	34	34	35	35	35	34	34	35	35	35	35	35	34	35	35	36	36	36	35	35	34	35	34	34	34	36	36	35	35	35
Minimum	33	33	33	33	34	34	34	34	34	34	33	33	33	33	34	34	33	33	34	34	33	33	34	33	33	33	33	33	34	35	33	33
April																																
Maximum	35	34	35	35	36	38	37	37	38	39	40	40	41	42	42	42	42	41	42	42	43	45	45	46	46	45	46	47	48	50	--	41
Minimum	33	33	32	33	33	36	36	36	37	38	39	40	41	40	41	41	40	40	39	40	42	43	44	45	45	45	45	45	46	48	--	40
May																																
Maximum	53	53	54	56	56	56	59	65	58	59	59	59	59	59	59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	50	50	51	54	55	55	54	54	56	57	59	58	58	57	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	71	70	70	72	73	72	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	70	69	70	70	72	71	--	--
July																																
Maximum	71	70	71	71	71	71	71	72	71	72	72	71	69	70	70	70	70	70	69	68	67	66	73	67	68	68	68	68	67	65	65	69
Minimum	70	69	70	71	71	70	70	68	70	71	71	69	69	69	70	70	70	69	68	67	66	66	65	65	67	68	68	67	65	65	65	68
August																																
Maximum	65	65	64	64	64	65	65	65	71	65	64	64	69	65	65	66	66	66	66	67	66	66	64	64	64	64	68	65	66	64	62	65
Minimum	65	64	64	64	63	64	64	65	64	63	62	63	64	63	64	65	66	66	66	66	65	64	64	64	63	63	64	65	64	62	62	64
September																																
Maximum	64	62	62	63	63	63	64	65	65	66	66	66	64	64	65	65	73	65	66	66	67	67	67	67	66	63	62	61	60	61	--	65
Minimum	62	62	62	62	63	63	63	64	65	65	66	64	64	64	64	64	64	64	65	66	66	67	67	66	63	62	61	60	60	60	--	64

STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

4-2246.5. CANASERAGA CREEK NEAR CANASERAGA, N. Y.

LOCATION.--Temperature recorder at gaging station on right bank, 150 feet upstream from bridge on road to village disposal area, 1.2 miles northeast of Canaseraga, Allegany County.
DRAINAGE AREA.--58.3 square miles.
RECORDS AVAILABLE.--Water temperatures: May 1964 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 76°F May 26; minimum, freezing point on many days in December and January.
EXTREMES, May 1964 to September 1965.--Water temperatures: Maximum, 77°F June 30 and July 1, 11, 19, 20, 1964; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	57	57	58	56	52	50	51	51	50	48	49	48	50	51	52	53	52	53	52	48	45	46	46	44	47	50	49	49	49	48	46	50
Minimum	49	54	52	51	50	48	46	43	48	44	43	42	47	47	46	47	48	47	47	45	42	45	43	42	41	45	44	47	46	44	42	46
November																																
Maximum	45	46	47	46	45	43	43	45	45	45	46	46	47	44	43	45	42	40	38	39	37	34	35	37	39	40	38	38	38	35	--	42
Minimum	39	41	43	41	43	42	40	43	40	43	43	42	44	41	38	42	39	37	36	37	34	33	33	34	36	38	35	35	35	33	--	39
December																																
Maximum	33	33	34	34	34	33	33	34	34	33	35	35	35	33	32	32	33	32	32	32	33	33	33	35	36	38	37	35	34	37	36	34
Minimum	32	32	32	33	33	33	32	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	34	35	35	33	33	33	34	33
January																																
Maximum	34	33	32	32	33	34	33	34	34	34	33	32	32	33	33	32	33	32	32	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum	33	32	32	32	32	32	33	32	32	33	32	32	32	32	32	32	32	32	32	--	--	--	--	--	--	--	--	--	--	--	--	--
February																																
Maximum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	35	34	34	34	34	34	34	34	34	34	35	--	--	--	--
Minimum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	34	34	33	33	33	34	34	33	33	34	34	--	--	--	--
March																																
Maximum	36	38	38	41	37	37	38	38	39	40	40	40	41	40	41	41	40	44	41	39	37	37	37	41	39	40	44	45	39	40	41	40
Minimum	35	35	35	36	36	36	37	38	38	38	37	37	38	38	38	38	38	38	38	37	37	36	36	36	37	38	37	38	37	37	37	37
April																																
Maximum	41	43	43	44	44	43	41	41	41	45	45	43	42	46	44	42	40	38	43	--	--	--	--	--	--	--	--	48	51	53	--	--
Minimum	36	37	37	37	38	39	39	38	40	40	41	42	40	40	42	40	38	36	36	--	--	--	--	--	--	--	--	42	44	46	--	--
May																																
Maximum	53	56	59	57	60	60	57	61	63	66	64	67	67	66	68	70	66	69	66	70	70	70	66	70	73	76	74	71	65	63	66	65
Minimum	49	50	53	55	53	54	55	54	56	60	60	58	60	57	58	62	61	60	61	60	59	63	62	59	62	65	68	64	59	57	56	58
June																																
Maximum	63	61	66	68	70	71	73	70	72	72	71	72	65	62	60	63	60	66	69	70	65	69	67	68	66	65	66	68	67	61	--	67
Minimum	58	59	56	56	57	61	64	64	65	65	61	61	59	59	56	56	58	57	58	59	61	59	59	59	56	54	55	57	59	56	--	59
July																																
Maximum	65	64	68	68	68	67	63	68	69	70	68	67	69	67	68	68	64	64	65	62	66	59	56	66	69	68	66	58	59	64	63	65
Minimum	53	54	55	54	56	55	54	56	56	58	54	53	54	56	57	54	57	57	55	52	52	54	55	56	57	55	56	55	53	51	52	55
August																																
Maximum	61	62	62	57	66	68	69	64	67	61	67	68	61	67	70	70	69	68	62	63	62	58	64	65	62	65	66	61	57	61	57	64
Minimum	56	55	55	54	52	55	58	58	57	57	56	55	57	57	57	58	57	58	58	55	54	56	55	52	54	58	57	54	51	49	52	55
September																																
Maximum	56	60	63	62	61	62	65	59	61	65	60	55	56	61	62	57	62	65	64	65	66	--	--	--	--	--	--	--	--	--	--	--
Minimum	55	52	51	54	54	55	55	56	55	56	55	53	54	54	55	54	53	56	56	56	56	--	--	--	--	--	--	--	--	--	--	--

STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

4-2320. GENESEE RIVER AT DRIVING PARK AVENUE, ROCHESTER, N. Y.

LOCATION.--At gaging station on right bank at Rochester, Monroe County, 40 feet downstream from plant 5 of Rochester Gas and Electric Corp., and 100 feet upstream from Driving Park Avenue Bridge.
DRAINAGE AREA.--2,467 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1954 to September 1955.
Water temperatures: October 1954 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 87°F Aug. 18 (p.m.).
EXTREMES, 1954-65.--Water temperatures: Maximum, 87°F Aug. 18 (p.m.); minimum, freezing point on several days in 1955, 1956, 1960 and 1963.

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0930 and 1530)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
a.m.	63	63	61	60	58	58	56	56	54	54	52	52	56	54	55	54	56	56	54	54	55	55	53	53	53	53	54	53	53	53	52	55
p.m.	62	61	59	58	56	54	54	54	51	51	50	50	53	52	52	53	52	52	53	53	58	53	53	52	51	52	52	52	52	51	51	53
November																																
a.m.	52	50	50	49	50	49	48	48	46	43	43	41	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
p.m.	50	49	48	48	47	45	48	46	44	42	40	40	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
December																																
a.m.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
p.m.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
January																																
a.m.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
p.m.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
February																																
a.m.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
p.m.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
March																																
a.m.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	37	37	37	--
p.m.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	37	44	45	--
April																																
a.m.	37	37	38	41	43	43	47	48	48	48	48	47	47	47	46	46	45	43	45	42	44	45	47	46	45	48	49	47	49	50	--	45
p.m.	39	39	41	41	41	45	46	45	43	45	46	46	46	47	46	44	44	42	43	42	43	43	44	44	43	44	47	48	49	52	--	44
May																																
a.m.	51	54	55	59	60	58	56	59	59	59	55	63	63	62	62	63	64	62	62	63	62	62	63	63	65	65	67	68	69	67	63	61
p.m.	54	52	60	58	60	59	57	61	64	66	65	66	61	62	60	65	63	63	63	65	65	64	64	64	67	70	72	70	70	65	62	63
June																																
a.m.	63	61	61	61	61	61	67	69	71	73	70	70	69	68	67	66	58	61	61	60	70	70	70	71	73	73	74	75	75	75	--	67
p.m.	64	60	59	59	61	61	61	60	62	62	62	--	--	68	67	67	70	69	70	71	75	74	75	74	74	74	75	75	75	73	--	68
July																																
a.m.	75	75	74	74	76	75	75	75	--	--	--	--	78	80	77	77	76	76	76	74	74	73	74	75	76	76	77	75	75	73	74	75
p.m.	73	73	73	--	--	--	--	--	--	--	--	--	79	81	75	73	74	74	74	74	75	77	76	75	74	74	78	75	75	75	75	--
August																																
a.m.	75	75	73	74	75	76	77	76	78	78	77	76	78	77	78	78	78	78	78	77	78	76	76	75	77	77	79	77	72	71	72	76
p.m.	76	77	75	76	77	79	78	77	79	78	78	78	80	82	83	85	85	87	84	80	79	78	79	78	79	77	78	78	69	68	76	78
September																																
a.m.	71	70	70	71	70	70	75	74	74	73	75	76	74	72	67	68	68	68	68	74	76	78	76	74	73	72	72	71	71	70	--	72
p.m.	74	72	72	72	72	72	73	73	74	75	75	75	73	71	--	68	68	69	70	71	73	74	73	72	71	70	70	70	70	70	--	72

STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

4-2340.55. CANOGA CREEK AT CANOGA, N. Y.

LOCATION.--At gaging station at bridge on Route 89, 0.5 mile north of Canoga, Seneca County, and 0.8 mile upstream from mouth.
DRAINAGE AREA.--3.20 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1964 to September 1965 (discontinued).
EXTREMES, 1964-65.--Water temperatures: Maximum, 68°F July 10 and Sept. 23; minimum, freezing point on many days during winter months.

Chemical analyses, in parts per million, water October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Turbidity
Oct. 10, 1964	0.57	6.1				127	21	65	3.0		269	0	185	110					403	182		1070	7.9		
Juns 30, 1965	3.2					124					250	0	213	109					488			1120	7.9		

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at approximately 0700)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	48	53	54	52	49	45	40	41	46	42	39	--	50	48	--	48	44	53	50	44	40	43	41	39	40	44	--	--	49	46	36	45
November	38	39	44	42	44	45	43	45	41	45	48	48	49	44	44	45	44	--	38	40	35	32	32	32	34	42	40	41	41	33	--	41
December	32	33	32	32	32	32	32	32	32	32	32	32	33	32	32	32	32	32	32	32	32	32	32	32	39	39	--	32	32	34	35	33
January	32	32	32	32	32	32	32	32	32	32	32	33	32	32	--	--	32	32	32	32	32	32	--	32	32	32	32	32	32	32	32	32
February	32	32	32	32	32	32	32	--	--	--	--	--	36	32	--	39	32	35	32	32	32	32	32	35	39	--	32	35	--	--	--	--
March	40	44	33	40	40	39	41	41	--	35	32	41	33	40	38	36	--	--	--	39	39	32	37	33	35	39	38	36	37	--	40	38
April	35	38	37	36	36	38	--	46	40	45	44	45	42	42	42	44	41	39	39	41	43	46	44	42	41	44	--	57	43	45	--	42
May	44	47	49	51	46	45	50	47	51	--	--	65	50	45	46	51	54	49	48	46	46	52	49	46	--	52	55	51	50	46	46	49
June	46	50	46	46	48	50	55	55	55	55	50	50	51	50	47	49	51	50	52	53	57	54	56	58	51	50	54	58	60	58	--	52
July	52	54	58	56	57	58	54	58	60	68	56	56	57	62	61	58	60	60	57	54	--	56	58	--	63	61	60	--	56	53	54	58
August	61	61	60	57	55	60	65	67	66	66	60	59	64	62	63	65	--	--	66	60	58	60	59	55	56	62	--	63	54	50	--	61
September	57	54	--	58	--	60	58	62	--	62	61	54	56	57	60	--	--	62	63	65	67	--	68	64	56	54	49	46	52	53	--	58

STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

4-2375. SENECA RIVER AT BALDWINSVILLE, N. Y.

LOCATION.--At lock 24, Baldwinsville, Onondaga County, 350 feet upstream from gaging station.
DRAINAGE AREA.--3,130 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1957 to September 1958.
Water temperatures: October 1957 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 77°F July 17 and Aug. 10, 16-18.
EXTREMES, 1957-65.--Water temperatures: Maximum, 82°F July 24, 1964; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at approximately 0800)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	60	61	61	61	61	59	57	56	56	56	54	54	54	54	55	56	57	57	57	56	54	54	53	52	50	50	52	52	53	53	52	55
November	51	52	52	51	51	51	50	51	51	51	50	51	52	52	52	51	50	48	48	47	46	43	42	42	42	43	44	43	43	41	--	48
December	40	40	39	38	38	38	37	37	37	36	36	--	--	38	37	36	35	35	--	--	34	34	34	34	--	--	--	37	35	35	36	--
January	--	--	--	35	36	36	35	35	--	--	34	34	35	34	33	--	--	34	34	--	--	--	--	--	--	--	--	--	--	--	--	--
February	34	--	--	--	--	--	--	--	--	34	34	--	--	--	35	35	35	34	34	--	--	--	35	34	34	34	--	--	--	--	--	--
March	33	34	34	35	36	--	--	39	37	37	36	36	--	--	38	38	38	38	38	--	--	36	37	36	36	36	--	--	37	36	36	--
April	37	38	--	--	39	41	42	43	44	--	--	45	46	44	43	41	42	43	43	44	46	48	48	48	49	49	49	48	49	48	--	44
May	49	50	51	56	57	57	58	59	59	58	60	62	63	63	63	64	63	64	64	63	64	63	65	65	65	66	68	69	69	68	66	62
June	65	65	64	65	65	65	68	70	71	73	72	72	72	69	68	67	67	67	67	66	69	71	72	73	72	71	72	74	74	74	--	69
July	73	74	74	74	74	74	73	73	74	74	73	73	74	75	75	76	77	76	75	75	74	74	75	76	76	76	75	75	74	74	73	74
August	73	72	72	72	73	73	74	76	76	77	75	74	74	75	76	77	77	77	76	76	75	75	75	73	72	73	73	73	70	67	67	74
September	66	66	66	66	67	67	66	66	68	69	68	67	67	67	67	67	67	67	68	68	69	70	72	70	69	67	66	64	64	64	--	67

STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

4-2560. INDEPENDENCE RIVER AT DONNATTSBURG, N. Y.

LOCATION.--Temperature recorder at gaging station on right bank at downstream side of highway bridge at Donnattsburg, Lewis County, 1.2 miles downstream from Chase Lake Outlet, 4.2 miles northeast of Glenfield, and 5 miles upstream from mouth.
DRAINAGE AREA.--91.7 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1959 to September 1961, October 1963 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 74°F June 29; minimum, freezing point on many days during winter months.
EXTREMES, 1959-61, 1963-65.--Water temperatures: Maximum, 60°F July 24, 1961; minimum, freezing point on many days during winter months.

Temperature (°F) of water, water year October 1964 to September 1965
(Continuous ethyl alcohol-actuated thermograph)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
Maximum	50	55	55	53	51	47	46	44	44	44	42	44	44	48	49	49	51	53	52	47	44	43	43	42	43	46	48	48	48	47	44	47
Minimum	45	49	51	49	47	44	42	40	42	41	39	39	44	44	44	45	45	50	47	44	41	43	42	39	39	43	45	47	46	44	41	44
November																																
Maximum	42	43	45	43	42	43	44	45	44	44	46	48	48	46	43	43	43	41	39	39	39	39	35	35	35	35	36	37	37	37	--	41
Minimum	39	41	42	41	42	42	43	44	42	44	44	45	46	43	42	43	41	39	38	38	35	35	35	35	35	35	35	35	37	35	--	40
December																																
Maximum	36	37	35	35	35	36	38	36	35	35	36	36	35	35	36	36	35	37	36	35	36	35	32	32	32	32	33	32	33	32	32	35
Minimum	35	35	35	35	35	35	36	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	32	32	32	32	32	32	32	32	32	34
January																																
Maximum	32	33	32	32	32	32	32	33	32	32	32	32	32	33	34	33	33	32	32	32	32	32	32	32	32	32	32	32	33	33	33	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	32
February																																
Maximum	33	33	33	34	33	33	32	32	33	32	33	33	33	32	33	35	34	33	34	35	34	34	34	34	33	33	33	33	--	--	--	33
Minimum	33	33	33	33	33	32	32	32	32	32	32	32	32	32	32	33	33	33	33	34	33	33	34	33	33	33	33	33	--	--	--	33
March																																
Maximum	35	35	33	33	34	33	33	34	33	34	34	34	35	36	34	35	34	33	34	34	34	34	33	34	34	33	35	35	34	34	35	34
Minimum	33	33	33	33	33	33	33	33	33	33	34	34	33	34	34	34	33	32	33	33	33	33	32	32	32	32	32	33	32	32	34	33
April																																
Maximum	35	39	39	39	41	43	41	37	36	42	40	37	35	39	37	37	36	38	42	43	44	44	43	43	46	46	43	46	49	52	--	41
Minimum	34	34	34	34	34	36	37	35	35	35	34	35	34	34	35	36	35	35	36	39	41	42	40	38	41	43	42	41	43	47	--	37
May																																
Maximum	52	54	56	57	56	56	56	57	60	65	67	64	63	62	64	66	64	59	59	63	64	64	61	65	67	70	68	66	63	58	58	61
Minimum	48	48	51	55	51	51	52	51	56	59	64	58	60	55	57	61	59	56	54	55	56	60	58	54	57	62	65	61	58	54	50	56
June																																
Maximum	56	55	58	61	64	66	69	70	70	68	66	66	64	57	57	62	61	64	67	68	67	69	68	67	64	67	69	71	74	72	--	65
Minimum	51	53	50	51	54	57	63	65	66	65	60	58	56	55	52	53	57	57	59	61	64	62	63	63	59	58	60	63	67	66	--	59
July																																
Maximum	69	68	67	68	69	67	65	68	70	70	68	68	69	69	68	67	67	65	64	64	64	63	64	68	68	68	66	62	62	61	62	66
Minimum	59	59	51	50	51	51	59	51	51	55	51	50	51	55	53	50	53	52	58	57	57	58	51	52	55	52	50	59	53	55	56	59
August																																
Maximum	62	62	62	64	64	67	71	70	70	70	68	68	66	71	73	72	71	73	71	67	66	65	66	65	65	65	64	64	58	56	55	66
Minimum	59	60	59	55	57	60	65	67	67	66	63	61	64	64	66	66	65	68	66	63	62	61	62	58	60	62	61	58	53	49	51	61
September																																
Maximum	54	60	60	62	62	62	65	63	61	66	65	60	58	58	58	57	58	59	61	64	66	68	67	65	60	56	52	51	51	53	--	60
Minimum	52	52	54	57	57	59	57	59	55	60	60	56	56	56	57	54	54	57	59	60	63	64	65	60	55	52	48	45	49	50	--	56

STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

4-2571.5. BEAVER RIVER AT MOSHIER FALLS, N. Y.

LOCATION.--At the Niagara-Mohawk Moshier Falls Power Station, Herkimer County, at the confluence of Beaver River and Sunday Creek near Number Four, N. Y.
DRAINAGE AREA.--184 square miles.
RECORDS AVAILABLE.--Water temperatures: October 1955 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 69°F Aug. 17-19; minimum, 34°F Dec. 19, Jan. 17, and Mar. 22.
EXTREMES, 1955-65.--Water temperatures: Maximum, 74°F Sept. 10, 1959; minimum, 33°F on many days during winter months some years.

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at approximately 1000)

Month	Day																															Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	58	57	57	57	58	55	54	53	52	54	50	50	50	50	50	51	50	51	50	49	47	47	48	45	45	48	47	48	48	47	45	51
November	44	47	47	47	47	46	45	45	45	45	48	47	46	45	44	44	42	42	42	40	39	39	40	40	40	41	39	38	40	39	--	43
December	37	36	36	35	35	36	35	35	35	35	35	36	39	37	37	35	35	35	34	35	35	35	36	37	40	40	39	36	35	37	36	36
January	35	35	36	35	35	35	35	35	38	37	36	35	35	35	35	35	34	35	35	35	35	35	36	36	36	35	35	36	35	35	35	35
February	35	35	35	35	35	35	35	35	35	36	35	37	36	36	37	36	35	35	35	35	36	35	36	36	36	35	35	35	--	--	--	35
March	36	36	36	36	36	36	36	36	36	36	36	36	36	37	36	36	35	36	36	35	35	34	35	35	35	36	37	37	36	36	35	36
April	35	36	36	36	36	36	36	36	36	37	38	37	36	37	37	37	37	37	36	38	39	38	38	37	39	39	38	39	39	40	--	37
May	43	42	46	45	44	47	49	47	49	52	54	49	49	52	51	54	56	56	55	53	54	56	56	55	55	56	58	58	58	56	53	52
June	56	56	55	56	55	56	58	61	62	62	62	57	60	59	59	59	60	59	59	60	62	62	63	62	61	60	60	64	65	65	--	60
July	65	65	65	63	63	63	60	62	62	65	62	62	62	66	68	65	65	65	66	66	65	65	66	65	66	66	67	67	66	67	67	65
August	67	67	65	66	66	66	67	68	68	68	67	67	68	66	67	68	69	69	69	66	68	65	68	67	66	67	68	67	66	64	59	67
September	64	59	61	62	63	64	64	63	63	64	63	63	62	61	62	61	61	60	61	62	64	64	65	64	62	55	59	59	59	56	--	62

STREAMS TRIBUTARY TO LAKE ONTARIO--Continued

4-2605. BLACK RIVER AT WATERTOWN, N. Y.

LOCATION.--At dam at Watertown Municipal Powerplant, Watertown, Jefferson County, and about 1.6 miles upstream from gaging station.
DRAINAGE AREA.--1,876 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1955 to September 1956.
Water temperatures: October 1955 to September 1959, July 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 79°F Aug. 19; minimum, 35°F on many days during December to February.
EXTREMES, 1955-59, 1962-65.--Water temperatures: Maximum, 82°F July 28, 1964; minimum, freezing point on many days during winter months.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Lithium (Li)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids: Residue at 180°C	Dissolved solids: Calculated	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Total acidity as H^{+1}	Specific conductance (micromhos at 25°C)	pH	Color	Turbidity
Aug. 18, 1965	1010	5.2		0.53	0.04	13	0.8	4.7	1.0		32	0	18	2.5	0.3	0.7	69		36	10		102	6.5	35	1
Sept. 24.....	1720					14	2.4				35	0							45	16		108	6.6		

Temperature (°F) of water, water year October 1964 to September 1965
(Once-daily measurement at approximately 0900)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October	59	58	60	--	59	57	55	55	54	53	--	50	50	50	50	52	54	--	54	53	52	51	51	50	--	50	51	53	53	52	51	53
November	--	50	49	50	50	50	49	--	49	49	48	48	49	50	--	47	47	47	45	45	43	--	40	40	40	40	40	40	--	40	--	46
December	38	38	38	38	38	--	38	38	38	36	36	36	--	36	37	36	36	36	37	--	38	38	38	37	38	37	--	36	35	36	35	37
January	--	36	--	35	36	36	35	36	37	--	36	37	36	36	35	35	--	35	35	35	35	35	35	--	35	35	35	36	35	35	--	35
February	35	35	35	35	35	35	--	35	35	35	35	37	38	--	37	38	38	38	38	38	--	39	38	38	38	38	38	38	--	--	--	37
March	37	36	36	37	38	38	--	38	39	39	38	39	40	--	40	41	40	40	39	38	--	38	38	37	37	38	37	--	37	38	37	38
April	37	37	37	--	38	39	40	41	42	41	--	43	40	40	41	42	42	--	42	43	45	46	48	47	--	49	50	50	50	50	--	43
May	52	--	56	57	58	59	61	60	--	62	65	65	65	65	65	--	67	65	65	65	65	66	--	65	66	68	70	69	68	--	--	64
June	64	64	63	63	64	--	68	70	72	72	72	70	--	68	66	66	68	66	68	--	70	70	71	72	70	70	--	73	74	75	--	69
July	74	74	73	--	--	74	73	72	73	73	--	75	75	76	75	74	75	--	73	72	72	72	73	73	--	75	75	73	72	73	72	74
August	--	72	70	69	70	71	74	--	75	76	74	73	73	74	--	75	77	78	79	77	76	--	74	72	72	72	72	69	--	69	65	73
September	65	64	65	65	--	--	68	68	68	68	70	--	69	67	68	66	65	65	--	67	69	70	73	73	71	--	64	62	62	61	--	67

ST. LAWRENCE RIVER MAIN STEM

4-2606. ST. LAWRENCE RIVER AT ALEXANDRIA BAY, N. Y.

LOCATION.--Off pier behind post office, at the Corps of Engineers river-stage gage at Alexandria Bay, Jefferson County.
DRAINAGE AREA.--296,500 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: October 1955 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 71°F Aug. 18-21 (p.m.).
EXTREMES, 1955-65.--Water temperatures: Maximum, 75°F on several days during August and September 1959; minimum, freezing point on many days during winter months.
REMARKS.--Stream frozen Jan. 15 to Apr. 15.

Temperature (°F) of water, water year October 1964 to September 1965
(Twice-daily measurements at approximately 0800 and 1600)

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
October																																
a.m........	60	60	60	60	59	59	58	58	58	57	55	54	55	54	54	55	55	54	55	55	54	54	54	54	54	53	52	53	54	52	52	56
p.m........	60	61	60	60	60	58	58	58	58	56	55	54	55	55	55	55	55	55	55	56	54	54	54	54	53	53	52	53	53	52	52	56
November																																
a.m........	52	52	52	52	52	52	52	51	51	51	50	51	51	50	50	50	50	49	49	49	48	46	46	44	44	44	44	44	44	44	--	49
p.m........	52	52	52	52	52	52	52	51	51	50	50	51	51	50	50	50	50	49	49	49	48	46	46	44	44	44	44	44	44	43	--	49
December																																
a.m........	42	42	42	42	42	41	38	38	38	38	40	40	39	40	39	38	38	37	36	36	36	36	36	36	36	36	36	36	36	36	35	38
p.m........	42	42	42	42	41	40	38	39	38	39	40	40	39	40	39	38	37	36	36	36	36	36	36	36	36	36	36	36	36	36	35	38
January																																
a.m........	35	35	35	35	34	35	35	34	35	34	34	35	35	34	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
p.m........	35	35	35	35	35	36	34	35	35	34	35	35	35	34	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
February																																
a.m........	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
p.m........	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
March																																
a.m........	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
p.m........	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
April																																
a.m........	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	34	34	34	33	34	34	34	34	34	35	36	37	37	36	38	--	--
p.m........	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	34	34	33	34	34	34	34	34	35	36	36	37	37	37	39	--	--
May																																
a.m........	39	39	40	41	43	44	44	43	44	44	45	44	46	46	48	49	49	49	49	49	50	50	51	51	52	52	53	54	54	54	54	47
p.m........	39	40	42	42	43	44	44	43	44	45	45	46	46	48	48	50	49	49	50	50	50	51	51	52	52	52	54	54	54	54	54	48
June																																
a.m........	54	54	55	54	54	54	56	56	56	57	57	57	57	57	56	55	54	54	54	56	57	58	58	58	58	60	60	61	62	62	--	57
p.m........	54	55	55	54	54	55	56	56	57	57	57	58	57	57	56	55	54	54	54	56	57	58	58	59	58	60	61	62	62	64	--	57
July																																
a.m........	63	63	63	63	64	64	64	64	65	65	65	66	65	66	66	67	67	67	67	67	66	66	65	65	66	66	67	67	67	67	66	65
p.m........	63	64	63	64	64	65	64	64	66	65	66	66	66	67	66	67	67	67	68	67	67	66	66	66	66	67	67	67	67	66	67	66
August																																
a.m........	67	66	66	67	66	68	68	68	68	69	69	68	69	70	70	70	70	70	70	70	70	70	70	70	70	69	69	69	68	68	67	69
p.m........	68	66	66	68	67	68	68	68	69	69	69	68	70	70	70	70	70	71	71	71	71	70	70	70	70	69	70	69	68	68	67	69
September																																
a.m........	67	66	65	64	64	66	66	66	66	66	65	66	65	65	65	64	64	64	64	64	65	66	66	66	65	65	64	64	64	63	--	65
p.m........	67	66	64	64	65	65	66	66	66	66	66	66	65	66	65	64	64	64	64	64	65	66	66	66	65	65	64	64	64	63	--	65

ST. LAWRENCE RIVER BASIN IN OHIO, LOW-FLOW INVESTIGATION

Chemical analyses, in parts per million, water year October 1964 to September 1965

Station number	Location	Date of collection	Discharge (cfs)	Flow percent duration	Iron (Fe)	Manganese (Mn)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Dissolved oxygen: Parts per million	Dissolved oxygen: Percent saturation
	STREAMS TRIBUTARY TO LAKE ERIE																		
	MAUMEE RIVER BASIN																		
4-1809.5.	St. Marys River at Mendon	Sept. 28,1965	11.9	95			196		46				550	272	111	750	7.0		
4-1845.	Bean Creek at Powers	Aug. 16......	9.3	98			315		22				443	361	103	720	7.9		
4-1859.	Auglaize River near Buckland	Sept. 28.....	2.90	95			291		128				668	421	182	1140	7.6		
4-1865.	Auglaize River near Fort Jennings	Aug. 19......	17	80			227		54				487	306	120	790	7.1		
4-1875.	Ottawa River at Allentown	Aug. 18......	22	65			265		78				602	293	76	1090	7.7		
4-1904.	Little Auglaize River near Melrose	Sept. 27.....	.21	90			198		22				396	284	122	575	8.1		
4-1928.	Beaver Creek near Grand Rapids	Sept. 28.....	5.55	97			394		115				798	452	129	1290	7.8		
	TOUSSAINT CREEK BASIN																		
4-1942.	Toussaint Creek near Limestone	Sept. 28.....	2.83	71			245		64				558	394	193	902	7.8		
	PORTAGE RIVER BASIN																		
4-1943.	Middle Branch Portage River at Mermill	Aug. 17......	.93	72			178		52				539	358	212	818	7.5		
4-1944.	South Branch Portage River near Six Points	Aug. 17......	4.90	--			132		82				579	288	180	896	7.0		
4-1945.	Portage Creek near Pemberville	Sept. 28.....	--	--			168		66				458	289	151	749	7.6		
	SANDUSKY RIVER BASIN																		
4-1960.	Sandusky River near Bucyrus	Aug. 12......	2.1	90			293		104				526	224	0	978	7.1		
4-1962.	Broken Sword Creek at Nevada	Aug. 12......	.22	91			245		18				454	365	164	693	7.1		
4-1965.	Sandusky River near Upper Sandusky	Aug. 12......	7.2	89			279		56				666	414	185	994	7.0		
4-1968.	Tymochtee Creek at Crawford	Aug. 25......	.1	98			176	544	28				1030	720	576	1280	8.0		
4-1971.	Honey Creek at Melmore	Sept. 27.....	.74	86			A230		24				353	282	94	568	8.3		
4-1973.	Wolf Creek at Bettsville	Sept. 27.....	.31	83			208		52				472	322	151	764	8.1		
4-1974.	East Branch Wolf Creek at Fort Seneca	Sept. 27.....	.57	[illegible]			222		112				511	300	113	874	7.7		

	STREAMS TRIBUTARY TO LAKE ERIE (cont.)																	
	CUYAHOGA RIVER BASIN																	
4-2020.	Cuyahoga River at Hiram Rapids	Sept. 28,1965	15.8	99+			158		14				180	156	26	348	7.4	
4-2040.	Little Cuyahoga River at Mogadore	Sept. 8......	1.20	93			160		28				266	198	67	432	8.1	
4-2045.	Little Cuyahoga River at Massillon Road, Akron	Sept. 8......	6.78	94			180		23				280	214	66	463	7.4	
4-2050.	Springfield Lake Outlet at Akron	Sept. 8......	1.10	78			121		47				260	174	75	458	7.6	
4-2072.	Tinkers Creek at Bedford	Sept. 7......	22.4	--			152		55				358	238	114	620	7.6	
4-2075.	Ohio Canal at Independence	Sept. 7......	68.9	--			128		131				514	230	125	881	6.9	
	GRAND RIVER BASIN																	
4-2110.	Rock Creek near Rock Creek	Sept. 28.....	.02	90			119		15				228	156	58	338	7.7	
4-2115.	Mill Creek near Jefferson	Sept. 27.....	.1	85			62		15				114	86	35	227	7.0	
4-2120.	Grand River near Madison	Sept. 27.....	7.55	93			154		24				236	180	54	399	7.7	
4-2122.	Grand River at Painesville	Aug. 16......	--	--			48	120	5980	0.2			10400	5440	5400	14600	6.3	
	ASHTABULA RIVER BASIN																	
4-2125.	Ashtabula River near Ashtabula	Sept. 27.....	.25	91			26		47				530	341	319	804	7.0	
	CONNEAUT CREEK BASIN																	
4-2130.	Conneaut Creek at Conneaut	Sept. 28.....	8.08	89			126		35				232	185	82	460	7.7	

A Includes 4 ppm carbonate (CO_3).

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN

Chemical analyses, in parts per million, April 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen		Turbidity	Loss on ignition (ppm)
																	Calcium, magnesium	Noncarbonate				ppm	Percent saturation		
STREAMS TRIBUTARY TO LAKE MICHIGAN																									
4-964.2. FISHER CREEK NEAR QUINCY, MICH.																									
Oct. 26, 1964	1.53		0.13						300		99	12		1.4			360	114	680	7.8					
Apr. 26, 1965	29.1	5.7	.28	0.06	88	19	5.8	1.7	214		115	10	0.2	7.4		359	298	122	566	7.6	40				
4-964.3. TALLAHASSEE DRAIN NEAR LESTER, MICH.																									
Apr. 15, 1964									178	4	180	8.0				433	324	204	618	8.3	10				77
July 28......	1.70								226		126	8.0				A385	322	137	601	8.1					
4-964.4. COLDWATER RIVER NEAR KINDERHOOK, MICH.																									
Apr. 15, 1964	3.60		--	--	52	21	4.7	1.7	184		65	9.0		--		266	216	65	427	7.0					
July 28......	.32		0.21	0.00					156		52	6.0	0.3	1.2	0.79	A240	186	58	375	7.5					
Oct. 27......	.10		.29	--					192		57	8.0		.4		--	218	60	427	7.6					
Apr. 26, 1965	75.6		.43	.02					164		76	6.0		2.3		278	226	92	438	7.3	5				
4-946.6. COLDWATER RIVER NEAR COLDWATER, MICH.																									
Apr. 16, 1964	21.1		--	--	76	24	5.3	1.4	197	--	120	1.0				367	288	127	553	6.8					
July 29......	1.96		0.22	0.12					220	--	86	8.0	0.2	1.5	0.09	A335	275	94	523	7.6					
Oct. 26......	.78		.18	--					228	4	74	11		1.3		--	268	74	511	8.3					
Apr. 26, 1965	164		.16	0.05					170	6	101	7.0		5.2		343	270	125	502	8.4	20				
4-964.8. EAST BRANCH COLDWATER RIVER NEAR QUINCY, MICH.																									
Apr. 15, 1964	14.2		--		56	21	8.0	2.0	202		66	11		--		285	226	60	463	7.0					
July 29......	1.09		--						149		73	10	0.2	1.0	0.12	A269	204	82	420	7.7					
Oct. 26......	.25		0.48						187		76	12		1.7		--	232	79	462	8.1					
Apr. 26, 1965	88.8		.15	0.02					184		84	10		2.9		301	248	97	487	7.2	8				
4-965. EAST BRANCH COLDWATER RIVER AT COLDWATER, MICH.																									
Apr. 16, 1964	12.3	--	--	--	77	25	7.7	1.6	229		106	11	--	--		375	295	108	579	6.9	--				
July 13......	1.35	7.5	0.37	0.08	81	27	10	1.3	248		103	20	0.5	0.6		382	313	110	622	7.9	7				
July 29......	.50	13	.11	.19	51	27	47	2.6	154		67	104	.5	1.6		380	238	112	706	8.0	2				
Oct. 26......	.28	--	.06	--	--	--	--	--	328		61	27	--	1.0		--	351	82	675	7.6	--				
Apr. 25, 1965	127	4.0	.28	.06	79	22	8.6	1.8	206		116	11	.1	1.8		355	288	119	558	7.9	18				

4-965.1. MUD CREEK NEAR COLDWATER, MICH.																									
Apr. 15, 1964 July 13...... July 29......	-- 0.24 .08						-- 95 140		244 230 356		174 80 46	28 228 305				537 A781 A998	402 392 472	202 203 180	788 1220 1560	8.1 8.5 7.4	10				81
4-965.3. HOG CREEK NEAR QUINCY, MICH.																									
Oct. 26, 1964 Apr. 26......	2.75 125		0.20 .18	0.05					300 210		68 74	10 8.0		0.5 1.7		310	318 262	72 90	589 494	8.0 7.5	25				
4-965.9. ROG CREEK NEAR HODUNK, MICH.																									
Oct. 27, 1964 Apr. 26, 1965	3.13 163	2.5	0.26 .19	0.06	59	29	5.5	1.4	284 218		61 84	9.0 6.4	0.1	0.7 1.2		322	296 266	63 88	553 518	7.9 7.7	35				
4-966. COLDWATER RIVER NEAR HODUNK, MICH.																									
Oct. 27, 1964 Apr. 26, 1965	25 517	4.2	0.15 .13	0.06	71	18	8.0	1.7	207 195		63 82	20 12	0.1	1.6 1.8		310	236 251	66 91	497 503	7.5 7.5	18				
4-967.2. SWAN CREEK NEAR BATAVIA, MICH.																									
Oct. 26, 1964 Apr. 26, 1965	0.38 18.6		0.17 .72	0.12					236 194		65 154	11 6.0		0.7 22		443	262 350	68 191	508 643	7.9 7.2	27				
4-967.4. SWAN CREEK TRIBUTARY NEAR BRONSON, MICH.																									
Oct. 26, 1964 Apr. 26, 1965	2.60 85.6		0.13 .21	0.07					220 186		67 80	9.5 7.0		1.2 4.9		306	248 250	68 98	489 478	7.8 7.2	27				
4-967.6. SWAN CREEK NEAR BRONSON, MICH.																									
Oct. 27, 1964 Apr. 27, 1965	3.9 123	4.2	0.24 .18	0.06	76	17	6.5	1.6	288 184		72 99	36 9.5	0.1	4.0 2.8		315	265 260	78 109	596 502	7.4 7.5	40				

A Calculated.

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Chemical analyses, in parts per million, April 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen: ppm	Dissolved oxygen: Percent saturation	Turbidity	Loss on ignition (ppm)
STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued																									
4-967.8. LITTLE SWAN CREEK NEAR MATTESON, MICH.																									
Oct. 26, 1964	0.56		0.28						204		64	7.0		0.4			230	63	446	8.0					
Apr. 26, 1965	34.7		.14	0.06					172		94	7.0		.8		302	250	109	477	7.2	10				
4-969.5. BEAR CREEK NEAR FULTON, MICH.																									
June 2, 1964.	1.93				65	20	4.8	0.9	258		33	4.0				279	244	32	466	8.0					
Feb. 18, 1965	10.7								154		108	5.4		13			255	129	487	7.4					
Aug. 11......	1.70								250		32	4.0		1.1			250	45	463	7.7					
4-970.4. LITTLE PORTAGE CREEK NEAR CLIMAX, MICH.																									
June 2, 1964.	0.49				63	25	6.3	0.8	214	4	74	8.0				326	260	78	495	8.4					26
Feb. 18, 1965	6.86								212		126	6.0		16			323	149	597	7.6					
Aug. 12......	.56								206		84	8.0		.7			260	90	497	8.1					
4-970.6. LITTLE PORTAGE CREEK NEAR FULTON, MICH.																									
Feb. 18, 1965		8.6	0.37	0.02	82	23	4.1	0.6	212		104	7.0	0.1	8.0		360	299	126	549	7.7	30				47
Aug. 12......	5.02								280		41	8.0		4.9			280	50	521	8.1					
4-971.15. PORTAGE RIVER TRIBUTARY NEAR McKAIN CORNERS, MICH.																									
June 2, 1964.	2.33				55	16	4.3	0.7	206		27	6.0		--		234	203	34	394	8.0					
Feb. 18, 1965	5.06								192		49	5.5		8.5			210	52	411	7.9					
Aug. 5.......	3.56								204	2	30	7.0		1.7			214	44	396	8.3					
4-971.2. PORTAGE RIVER NEAR PAVILION, MICH.																									
June 2, 1964.	8.46				62	20	4.6	0.9	200	4	60	10		--		288	237	72	453	8.3					
Feb. 18, 1965	21.9								214		93	6.0		7.4			282	106	526	7.7					
Aug. 5.......	10								180		54	7.0		1.2			214	66	406	8.2					
4-971.3. DORRANCE CREEK AT McKAIN CORNERS, MICH.																									
June 2, 1964.	0.86				86	24	5.4	0.7	294	0	52	8.0		--		375	313	72	580	8.1					26
Feb. 18. 1965	5.88								218	0	120	6.0		9.3			316	137	581	7.8					
Aug. 6.......	.25								264	0	45	7.0		1.8			272	55	510	7.8					

4-971.7. PORTAGE RIVER NEAR VICKSBURG, MICH.

Feb. 18, 1965		6.1	0.14	0.00	62	17	3.6	1.2	174	0	74	7.0	0.1	3.6		269	225	82	433	7.8	20				28
Aug. 6.......	10.8								188	0	47	8.0		.5			212	58	409	7.6					

4-972. GOURDNECK CREEK NEAR SCHOOLCRAFT, MICH.

Feb. 18, 1965	0.35								188	0	21	5.0		1.2			180	26	343	7.6					
Aug. 4.......		12	0.38	0.12	40	21	3.4	0.8	196	0	18	4.0	0.1	1.1	0.46	218	187	26	344	7.2	10	9.4	108		

4-972.05. GOURDNECK CREEK NEAR VICKSBURG, MICH.

June 2, 1964.	5.46				46	16	4.5	0.7	184	8	14	8.0		--		209	181	16	348	8.5					
Feb. 19, 1965	10.7								194	0	27	5.0		1.6			184	25	360	7.6					
Aug. 5.......	3.88								200	0	17	8.0		.5			188	24	358	7.3					

4-972.1. PORTAGE CREEK AT VICKSBURG, MICH.

Apr. 21, 1965																258			423	6.7					28
Aug. 5.......	8.0								240	0	12	66		0.2	0.12	368	192	0	596	7.1					

4-972.15. HOWARD LAKE INLET NEAR VICKSBURG, MICH.

June 2, 1964.	0.10				54	16	3.3	0.4	180	0	32	11		--		234	201	53	394	7.9					
Feb. 19, 1965	.23								138	0	95	7.0		11			222	109	435	7.8					
Aug. 6.......	.30								246	0	36	3.0		2.4			252	50	460	7.8					

4-973.3. BROWN CREEK NEAR VICKSBURG, MICH.

June 2, 1964.	2.62				82	22	6.0	1.2	260	0	78	10		--		358	295	82	565	8.1					29
Feb. 18, 1965	11.6								190	0	151	8.0		26		--	340	184	636	7.6					
Aug. 5.......	--								274	0	62	8.0		3.9		372	297	72	531	8.0		9.6	103		

4-973.7. FLOWERFIELD CREEK AT FLOWERFIELD, MICH.

June 2, 1964.	3.82				68	26	4.2	0.7	310	0	20	4.0		--		291	277	22	510	7.9					
Feb. 19, 1965	21.5								236	0	48	5.0		2.7			244	50	455	7.8					
Aug. 12......	9.59								274	0	17	5.0		1.8			290	65	525	7.7					

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Chemical analyses, in parts per million, April 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen		Turbidity	Loss on ignition (ppm)
																	Calcium, magnesium	Noncarbonate				ppm	Percent saturation		
STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued																									
4-975.28. PRAIRIE RIVER NEAR BRONSON, MICH.																									
Oct. 27, 1964	5.24		0.19						298	0	98	8.0		6.7			348	104	642	7.9					
Apr. 26, 1965	88.6		.39	0.06			4.7		190	10	170	6.0		12		472	376	200	677	8.4	37				20
4-975.28. PRAIRIE RIVER NEAR BURR OAK, MICH.																									
Oct. 27, 1964	8.34		0.27						298	0	92	6.0		3.0			340	96	626	7.9					
Apr. 26, 1965	137	8.8	.25	0.03	114	26	5.5	0.9	231	0	172	7.0	0.2	14	0.36	488	392	202	706	7.7	30				
4-1056.5. SEVEN MILE CREEK NEAR AUGUSTA, MICH.																									
June 2, 1964.	4.44				60	20	4.6	0.7	266	0	17	6.0		--		251	232	14	433	8.1					
Feb. 18, 1965	6.95								242	0	30	5.0		1.7			226	28	427	8.1					
Aug. 5.......	5.07								276	0	17	4.0		.9			252	26	456	8.1					
4-1056.8. AUGUSTA CREEK NEAR HICKORY CORNERS, MICH.																									
June 2, 1964.	5.36				67	22	4.1	0.8	282	0	23	6.0		--		284	258	26	483	8.2					
Feb. 18, 1965	11.0								248	0	37	4.0		5.9			252	48	467	7.9					
Aug. 4.......	5.94								282	0	27	6.0		5.2			272	40	495	8.0					
4-1057. AUGUSTA CREEK NEAR AUGUSTA, MICH.																									
Feb. 18, 1965	31	9.0	0.13	0.00	63	21	3.0	0.6	248	0	33	4.0	0.1	2.9		256	244	40	441	8.0	10				
Aug. 2.......									262	0	24	6.0		3.1			250	36	463	7.8					
4-1058. GULL CREEK NEAR GALESBURG, MICH.																									
Feb. 18, 1965	30	5.6	0.06	0.00	40	20	3.6	0.9	186	0	23	5.0	0.0	0.4		194	182	30	342	7.8	5				
Aug. 5.......									216	2	20	6.0		1.2			208	28	385	8.3					
4-1059.9 COMSTOCK CREEK NEAR KALAMAZOO, MICH.																									
June 2, 1964.	1.99				40	20	3.2	0.4	194	0	23	6.0		--		198	182	23	354	7.8					
Feb. 18, 1965	6.53								184	0	28	4.0		1.2			180	29	346	7.7					
Aug. 5.......	3.30								204	0	23	4.0		.7			196	29	362	8.2					

4-1060. KALAMAZOO RIVER AT COMSTOCK, MICH.

Feb. 18, 1965	1230	6.3	0.37	0.12	63	16	5.3	2.4	150	0	83	11	0.1	14		288	223	100	455	7.6	30				35
Aug. 5......		--			--	--	--	--	208	0	48	30	--	3.4		--	238	68	514	7.3	--				
Sept. 23.....		9.2			71	22	9.7	1.8	232	4	49	28	.2	4.0		312	268	71	532	8.3	10				

4-1060.5. ALLEN CREEK AT KALAMAZOO, MICH.

June 2, 1964.	3.26				84	28	30	3.0	316	0	57	48		--		437	325	66	739	7.4					
Feb. 18, 1965	5.44				--	--	--	--	292	0	95	80		17		--	376	137	889	7.3					
Apr. 22......	--	5.5	0.44	0.03	92	31	29	3.3	276	0	108	48	0.2	13		488	357	131	776	7.5	10	14.5	153		
Aug. 5.......	--				--	--	--	--	316	0	51	46		9.0		--	339	80	722	7.6					

4-1061.8. PORTAGE CREEK AT PORTAGE, MICH.

June 2, 1964.	11.5				49	18	4.7	0.7	206	0	20	8.0		--		225	196	27	376	8.1					
Feb. 19, 1965	15.6								203	0	30	7.0		4.3		--	200	34	388	7.9					
Aug. 5.......	12.8								204	0	21	6.0		2.3		250	202	35	367	7.9					

4-1061.9. PORTAGE CREEK NEAR PORTAGE, MICH.

Feb. 19, 1965		9.3			54	18	3.9	0.8	207	0	33	7.2	0.0	2.8		249	209	39	401	7.9	10				
Apr. 21......									206	0	--	--		--		248	216	47	415	7.4		8.6	75		
Aug. 4.......									206	0	24	8.0		3.0		282	206	37	386	7.9					

4-1063. PORTAGE CREEK NEAR KALAMAZOO, MICH.

Feb. 19, 1965		11	--		64	21	19	1.0	230	0	50	27	0.2	3.5		317	246	58	534	7.5	5				
Apr. 21......		--	--		--	--	--	--	242	0	--	--	--	--		--	244	46	546	7.4	--				
Apr. 22......		12	0.38	0.04	61	21	21	1.6	232	0	44	30	.2	3.8		317	239	48	534	7.5	7	10.2	98		
June 2.......	64.5	--	--		--	--	--	--	204	0	44	25	--	4.3		--	228	61	488	7.1	--				
June 15......		--	--		--	--	--	--	255	0	32	37	--	1.8		--	245	36	570	7.4	--				
July 14......		--	--		--	--	--	--	214	4	31	34	--	3.2		--	200	18	508	8.5	--				
July 26......		--	--		--	--	--	--	222	10	27	30	--	3.0		--	244	46	501	8.6	--				
Aug. 1.......		--	--		--	--	--	--	188	0	17	23	--	.1		--	177	23	391	7.4	--				
Aug. 4.......		--	0.32		--	--	--	--	232	0	31	24	--	3.0		324	230	40	494	7.6	--	8.0	83		
Aug. 4.......		14	--		71	22	29	1.7	252	0	32	56	0.1	2.6	0.66	396	268	61	617	7.5	5				

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Chemical analyses, in parts per million, April 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen		Turbidity	Loss on ignition (ppm)
																	Calcium, magnesium	Noncarbonate				ppm	Percent saturation		
STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued																									
4-1063. PORTAGE CREEK NEAR KALAMAZOO, MICH.--Continued																									
Aug. 5, 1965.		--	--		--	--	--	--	242	0	30	34	--	2.8		368	242	44	538	7.6	--				
Sept. 9......		--	--		--	--	--	--	240	0	35	32	--	2.3		--	246	50	531	7.5	--				
Sept. 16.....		--	--		--	--	--	--	240	0	32	32	--	2.9		--	246	50	522	7.5	--				
Sept. 23.....		--	--		--	--	--	--	202	0	68	22	--	5.0		--	254	88	522	7.3	--				
4-1064. WEST FORK PORTAGE CREEK AT KALAMAZOO, MICH.																									
Feb. 18, 1965	5.1	7.6			45	16	3.7	0.8	188	0	20	6.0	0.1	1.3		195	178	24	339	7.8	5				
Aug. 5.......									168	0	11	6.0		.6			157	20	297	7.6					
4-1067.5. SPRING BROOK NEAR EAST COOPER, MICH.																									
June 2, 1964.	10.0				59	21	3.5	0.7	250	0	23	8.0		--		255	234	28	434	8.1					
Feb. 18, 1965	11.4								258	0	30	5.0		5.6			248	36	452	8.2					
Aug. 5.......	11.5								260	0	23	6.0		4.8			249	36	461	8.0					
4-1067.7. KALAMAZOO RIVER NEAR COOPER CENTER, MICH.																									
Feb. 19, 1965	1400								190	0	93	28		0.4			255	99	557	7.2					
Apr. 22......									229	0	97	25		1.7			296	108	612	7.1		6.3	60		
Aug. 4.......									262	0	66	64		.3			300	85	715	7.1					
Sept. 23.....		8.0			84	22	18	2.3	226	0	86	54	0.2	4.5		405	300	115	677	7.3	18				
4-1068.5. SILVER CREEK NEAR PLAINWELL, MICH.																									
June 2, 1964.	7.09				69	24	4.5	1.0	294	0	49	6.0				320	271	30	505	7.9					20
Aug. 4, 1965.	6.84								292	0	20	4.0		2.5			268	28	489	8.1					
4-1077.5. RUPERT LAKE OUTLET NEAR PLAINWELL, MICH.																									
June 2, 1964.	5.71				67	25	5.9	0.8	268	0	50	10		--		303	270	50	514	7.9					
Feb. 19, 1965	8.68								278	0	65	6.0		2.7			298	70	546	7.9					
Aug. 4.......	4.70								256	0	56	8.0		.8			276	66	511	7.9					

STREAMS TRIBUTARY TO LAKE ONTARIO

4-2310. BLACK CREEK AT CHURCHVILLE, N.Y.

Aug. 18, 1965	0.75	2.8	0.11	0.12	224	48	27	3.4	123	0	605	55	0.3	0.6		1240	757	656	1370	8.2	18			0.8	
Sept. 21.....	4.1								118	0							808	711	1470	7.8					

4-2340.28. TRUMANSBURG CREEK AT TRUMANSBURG, N.Y.

Oct. 22, 1964	0.07	11			112	20	156	7.8	382	0	73	230					361	48	1390	8.0					
July 2, 1965.	.12											114					296		889						

4-2343. FAIRVILLE CREEK AT FAIRVILLE STATION, N.Y.

Oct. 9, 1964.	0.03	9.2			226	40	9.4	4.2	324	0	426	19					731	465	1230	7.9					
July 2, 1965.					135				292	0	215	21					496		912	8.2					

4-2490. OSWEGO RIVER AT LOCK 7, AT OSWEGO, N.Y.

Oct. 29, 1964	3500	0.7	0.16	0.03	214	24	210	5.3	130	0	110	594	0.3	3.5		1350	633	526	2220	7.1	3			0.0	
Dec. 1.......	3300	1.5	.08	.03	182	12	168	4.6	129	0	88	474	.2	3.5		1310	504	398	1810	7.0	3			.8	
Jan. 14, 1965	3060	1.6	.04	.02	102	8.8	81	2.7	117	0	81	206	.1	3.0		704	291	195	993	7.3	4			.6	
Feb. 17......	B8400	3.1	.01	.00	98	13	72	2.5	109	0	93	188	.3	6.2		546	300	210	960	7.2	12			1	
Mar. 23......	5770	2.1	.05	.01	97	11	72	2.4	111	0	85	182	.2	3.5		577	287	196	939	7.0	12			.0	
Apr. 21......	8800	1.9	.01	.00	79	9.0	53	2.0	97	0	66	144	.2	2.8		520	234	155	754	7.3	7			1	
May 20.......	427	1.7	.11	.04	118	14	87	3.1	140	0	98	236	.2	2.8		773	353	238	1150	7.2	11			.4	
June 17......	3110	1.5	.09	.04	118	18	115	3.2	112	0	88	308	.2	.9		1060	370	276	1310	7.2	6			.5	

4-2507.5. SANDY CREEK NEAR ADAMS, N.Y.

Oct. 29, 1964	15	2.7	0.08	0.01	61	6.4	6.1	1.8	166	0	41	7.4	0.2	1.0		217	179	42	354	8.2	3			0.0	
Dec. 1.......	102	4.8	.09	.02	44	3.9	3.6	1.2	114	0	30	4.3	.1	2.0		154	126	32	262	7.8	6			.5	
Jan. 14, 1965	117	4.3	.01	.04	50	2.2	3.4	1.2	140	0	24	4.6	.1	3.5		167	134	20	284	7.6	3			.6	
Feb. 17......	352	4.2	.33	.01	40	3.4	2.8	.8	114	0	19	4.2	.2	4.8		145	114	20	235	7.3	5			.7	
Mar. 23......	124	3.5	.01	.00	46	2.4	3.4	1.0	137	0	18	4.4	.1	2.7		157	125	13	266	8.0	3			1	
Apr. 21......	528	2.8	.01	.00	32	1.9	2.0	.9	93	0	14	2.5	.1	1.8		112	88	12	186	7.4	6			.5	
May 20.......	97	3.5	.05	.00	45	3.9	3.6	1.2	141	0	18	3.5	.1	1.5		151	128	12	260	8.1	12			.4	
June 2.......	45	1.8	.06	.00	36	13	4.2	1.3	145	0	19	4.9	.1	1.4		179	145	126	298	7.7	3			.4	

B Estimated.

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Chemical analyses, in parts per million, April 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Phosphorus as PO_4	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	pH	Color	Dissolved oxygen		Turbidity	Loss on ignition (ppm)
																	Calcium, magnesium	Noncarbonate				ppm	Percent saturation		
ST. LAWRENCE RIVER BASIN																									
4-2620. OSWEGATCHIE RIVER NEAR OSWEGATCHIE, N.Y.																									
Oct. 28, 1964	16	5.1	0.48	0.12	7.0	1.4	4.4	0.6	17	0	13	1.5	0.2	1.2		48	24	10	70	6.2	5			0.3	
Dec. 1.......	1340	6.0	.40	.24	8.8	1.4	3.0	.9	13	0	19	1.8	.2	4.5		55	28	18	83	6.3	6			.7	
Feb. 17, 1965	314	5.5	.28	.13	8.6	1.1	3.3	1.0	11	0	18	3.1	.2	1.8		54	26	17	80	6.3	4			.4	
Mar. 24......	1340	5.8	.24	.08	7.2	1.2	3.2	.7	14	0	16	1.6	.2	1.2		47	23	12	71	6.4	5			.3	
Apr. 21......	1400	5.1	.01	.00	7.0	.8	2.3	.9	9	0	14	1.9	.2	1.6		48	21	14	65	6.1	8			.4	
May 20.......	44	5.0	.31	.11	7.0	.8	3.1	.7	12	0	14	1.8	.2	1.4		48	21	11	66	6.2	7			.4	
June 17......	676	5.2	.52	.13	7.9	1.6	4.3	.8	18	0	15	2.5	.2	.9		46	26	11	76	6.4	12			.8	
4-2688. WEST BRANCH ST. REGIS RIVER NEAR PARISHVILLE, N.Y.																									
Oct. 28, 1964	91	9.9	0.30	0.01	6.1	2.7	1.2	0.4	20	0	8.1	0.8	0.1	1.1		43	26	10	51	6.9	16			1	
Dec. 1.......	197	9.9	.31	.01	5.8	1.3	1.4	.2	14	0	11	.0	.2	3.7		53	20	8	54	7.9	38			1	
Jan. 14, 1965	154	8.6	.09	.03	5.3	.7	1.2	.4	10	0	9.5	.1	.1	1.5		41	16	8	46	6.5	18			.6	
Feb. 17......	667	8.1	.11	.08	4.6	1.6	1.4	.1	8	0	9.9	1.0	.2	2.1		35	18	12	43	6.3	19			1	
Mar. 24......	138	10	.39	.02	5.6	1.2	1.6	.4	17	0	7.1	.2	.1	1.6		42	19	5	48	6.7	11			.2	
Apr. 21......	517	5.9	.18	.02	4.0	.5	.8	.4	7	0	7.7	.3	.1	1.3		33	12	6	34	6.2	20			2	
May 20.......	320	5.9	.39	.00	4.7	.6	1.2	.4	9	0	8.1	.4	.1	.9		33	15	8	38	6.3	55			.5	
June 17......	108	7.3	.29	.02	5.4	1.1	1.6	.4	17	0	6.5	.3	.2	.9		32	18	4	45	6.9	35			.7	
4-2695. DEER RIVER AT BRASHER IRON WORKS, N.Y.																									
Aug. 26, 1965	63	4.9	0.42	0.02	13	4.7	2.4	0.8	56	0	12	0.5	0.2	0.4		70	52	6	114	7.4	35			1	
Sept. 21.....	140								57	0							54	8	124	7.3					

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.00S	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
STREAMS TRIBUTARY TO LAKE SUPERIOR																		
4-255. BOIS BRULE RIVER AT BRULE, WIS.																		
Oct. 2, 1964	0820			174	2	0.9												
Nov. 2	0805			126	1	.3												
Dec. 1	0805			E 120	1	.3												
Jan. 2, 1965	1230			E 120	4	1.3												
Feb. 1	0900			E 120	1	.3												
Mar. 1	0840			E 130	1	.4												
Apr. 1	1155			143	1	.4												
Apr. 8	1S30			172	5	2.3												
May 3	1600			285	S	6.2												
June 3	2100			186	6	3.0												
July 9	1145			180	8	3.9												
Aug. 9	1100			1S8	7	3.6												
Sept. 6	1010			122	4	1.3												
4-270. BAD RIVER NEAR ODANAH, WIS.																		
Oct. 12, 1964	1440			30S	2	1.7												
May 18, 1965	0920			3960	780	S340												
June 21	1700			131	6	2.1												
STREAMS TRIBUTARY TO LAKE MICHIGAN																		
4-610. BRULE RIVER NEAR FLORENCE, WIS.																		
Nov. 13, 1964	0900			403	24	26												
Apr. 16, 1965	0815			690	26	48												
Apr. 23	1330			1420	26	100												
May 11	1000			2150	30	174												
May 1S	1000			1820	26	12S												
June 1	0900			574	22	34												
July S	0900			276	21	16												
July 30	0S30			216	22	13												
Aug. 2	0900			330	20	18												
Aug. 1S	1430			248	17	11												
Sept. 2	0900			241	14	9.1												
4-660. MENOMINEE RIVER NEAR PEMBINE, WIS.																		
Oct. 20, 1964	1800			1690	11	50												
May 13, 1965	1025			2050	24	133												

E Estimated.

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued																		
4-665. PIKE RIVER AT AMBERG, WIS.																		
Oct. 25, 1964	0700			121	2	0.6												
Nov. 4	1330			156	4	1.7												
Nov. 12	0930			273	4	2.9												
Apr. 8, 1965	2040			367	6	5.9												
Apr. 14	0730			601	12	19												
Apr. 26	1900			550	6	8.9												
May 2	0800			598	10	16												
May 4	0730			572	8	12												
May 8	0900			975	11	29												
May 9	1030			1120	11	33												
May 16	1115			688	13	24												
May 22	0930			494	9	12												
May 27	0800			416	11	12												
June 21	0700			190	8	4.1												
July 11	0700			146	12	4.7												
July 31	0830			123	14	4.6												
Aug. 1	1200			183	12	5.9												
Aug. 8	0800			154	11	4.6												
Aug. 22	0800			102	10	2.8												
Aug. 30	0730			100	14	3.8												
Sept. 5	1000			127	11	3.8												
Sept. 17	0730			161	10	4.3												
Sept. 19	1345			190	10	5.1												
Sept. 20	0900			306	10	8.3												
4-800. LITTLE WOLF RIVER AT ROYALTON, WIS.																		
Oct. 5, 1964	1610			245	4	2.6												
May 11, 1965	1115			740	10	20												

4-860. SHEBOYGAN RIVER AT SHEBOYGAN, WIS.

Nov. 3, 1964.......	1600			70	24	4.5												
Mar. 11, 1965......	1630			--	60	--												
Apr. 5............	1100			1020	56	154												
Apr. 8............	0900			3590	54	523												
Apr. 9............	1310			2660	100	718												
Apr. 9............	1730			2730	108	796												
Apr. 11...........	1600			3350	272	2460												
Apr. 16...........	1600			1900	52	267												
Apr. 26...........	1350			842	44	100												
May 9.............	0910			341	84	77												
July 17...........	0900			34	10	.9												
Sept. 6...........	2010			69	7	1.3												
Sept. 7...........	0735			115	46	14												
Sept. 7...........	1940			122	36	12												
Sept. 9...........	1900			1770	308	1470												
Sept. 16..........	1700			254	452	310												
Sept. 20..........	0930			644	144	250												
Sept. 21..........	0900			2350	292	1850												

4-870. MILWAUKEE RIVER AT MILWAUKEE, WIS.

Oct. 13, 1964......	1200			133	6	2.2												
Apr. 9, 1965.......	1415			5060	38	519												
Apr. 27...........	1305			1040	14	39												
Aug. 11...........	0830			100	156	42												

4-872.4. ROOT RIVER AT RACINE, WIS.

Oct. 9, 1964.......	1030			5.2	44	0.6												
Apr. 2, 1965.......	1440			1130	220	671												
Apr. 28...........	1000			270	17	12												
Sept. 24..........	1150			434	100	117												

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
STREAMS TRIBUTARY TO LAKE ONTARIO																		
4-2204.7. DYKE CREEK NEAR ANDOVER, N. Y.																		
Dec. 11, 1964	2325	43		14	3	0.1												
Dec. 24	1305	44		19	1	.1												
Jan. 8, 1965	2205	39		313	179	151												
Jan. 9	0155	39		480	153	198												
Jan. 9	0935	36		313	29	24												
Feb. 8	0550	34		558	108	163												
Feb. 8	1455	34		826	211	470												
Feb. 9	0605	33		262	15	11												
Apr. 7	1315	39		524	81	114												
Apr. 7	1935	39		386	43	45												
Apr. 8	0500	39		220	13	7.7												
4-2215. GENESEE RIVER AT SCIO, N. Y.																		
Dec. 24, 1964	1230	38		65	7	1.2	--	--	--	--	--	--	--	--				
Jan. 8, 1965	2120	38		1110	433	1300	--	--	--	--	--	--	--	--				
Jan. 9	0315	39		2070	668	3730	--	--	--	--	--	--	--	--				
Jan. 9	1040	35		2280	246	1510	42	54	65	77	89	95	99	99				BCSW
Jan. 9	1720	35		1620	97	424	--	--	--	--	--	--	--	--				
Feb. 8	1405	34		2960	358	2880	--	--	--	--	--	--	--	--				
Feb. 8	1740	33		3180	280	2400	--	--	--	--	--	--	--	--				
Feb. 9	0650	32		2240	63	381	--	--	--	--	--	--	--	--				
Feb. 9	1815	33		1540	68	283	--	--	--	--	--	--	--	--				
Feb. 10	1000	34		1480	47	188	--	--	--	--	--	--	--	--				
Feb. 11	1020	34		1550	50	209	--	--	--	--	--	--	--	--				
Apr. 7	1450	40		2750	296	2200	21	35	45	57	71	82	95	99	100			BCSW
Apr. 7	1510	40		2680	296	2140	--	--	--	--	--	--	--	--				
Apr. 8	0555	39		1750	59	279	--	--	--	--	--	--	--	--				

4-2217.2. ANGELICA CREEK AT TRANSIT BRIDGE, N. Y.

Dec. 12, 1964........	0030	35		8.8	.2	T	--	--	--	--	--	--	--	--	--			
Dec. 24.............	1150	36		76	59	12	--	--	--	--	--	--	--	--	--			
Jan. 8, 1965........	2035	35		618	1140	1900	--	--	--	--	--	--	--	--	--			
Jan. 9..............	0405	39		1370	850	3140	--	--	--	--	--	--	--	--	--			
Jan. 9..............	1115	37		839	251	568	--	--	--	--	--	--	--	--	--			
Feb. 8..............	1335	34		1450	831	3250	--	--	--	--	--	--	--	--	--			
Feb. 8..............	1700	33		1600	665	2870	--	--	--	--	--	--	--	--	--			
Feb. 9..............	0735	32		702	101	191	--	--	--	--	--	--	--	--	--			
Feb. 9..............	1730	33		612	232	383	--	--	--	--	--	--	--	--	--			
Feb. 10.............	0920	35		769	270	561	--	--	--	--	--	--	--	--	--			
Feb. 11.............	0940	35		672	109	198	--	--	--	--	--	--	--	--	--			
Apr. 7..............	1105	39		1250	752	2540	17	30	40	52	66	73	92	98	99	100		BCSW
Apr. 7..............	1140	39		1210	723	2360	8	16	28	41	63	75	90	98	100			BNS
Apr. 7..............	1845	40		853	215	495	--	--	--	--	--	--	--	--	--			
Apr. 8..............	0645	--		572	63	97	--	--	--	--	--	--	--	--	--			

4-2229. EAST KOY CREEK AT EAST KOY, N. Y.

Dec. 12, 1964........	0150	34		69	13	2.4											
Dec. 12.............	1535	--		149	126	51											
Dec. 24.............	1025	34		58	28	4.4											
Jan. 8, 1965........	0925	33		56	10	1.5											
Jan. 8..............	1305	33		60	10	1.6											
Jan. 8..............	1730	33		80	47	10											
Jan. 9..............	0645	34		511	249	344											
Jan. 9..............	1305	36		529	94	134											
Feb. 8..............	1245	35		72	76	15											
Feb. 9..............	0915	32		130	26	9.1											
Feb. 9..............	2040	34		130	23	8.1											
Feb. 10.............	1100	34		203	51	28											

T Less than 0.05 ton.

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
STREAMS TRIBUTARY TO LAKE ONTARIO--Continued																		
4-2229. EAST KOY CREEK AT EAST KOY, N. Y.--Continued																		
Feb. 10, 1965.......	1100	34		203	51	28												
Feb. 10............	2300	33		448	96	116												
Feb. 11............	0715	32		385	46	48												
Feb. 11............	1810	33		361	64	73												
Feb. 12............	0715	35		274	58	43												
Feb. 13............	0910	32		301	19	15												
4-2230. GENESEE RIVER AT PORTAGEVILLE, N. Y.																		
Dec. 24, 1964.......	1050	36		365	16	16	--	--	--	--	--	--	--	--	--			
Jan. 8, 1965........	1710	38		908	34	83	--	--	--	--	--	--	--	--	--			
Jan. 9............	0725	35		9280	2000	50100	12	17	28	42	66	85	96	99	100			BNS
Jan. 9............	1225	36		10100	1340	36500	--	--	--	--	--	--	--	--	--			
Jan. 9............	1825	36		7880	718	15300	--	--	--	--	--	--	--	--	--			
Feb. 8............	1220	34		4930	1410	18800	--	--	--	--	--	--	--	--	--			
Feb. 8............	1940	32		11200	1460	44200	--	--	--	--	--	--	--	--	--			
Feb. 9............	0855	34		8340	518	11700	--	--	--	--	--	--	--	--	--			
Feb. 9............	1640	35		6180	381	6360	--	--	--	--	--	--	--	--	--			
Feb. 10............	0845	35		5280	387	5520	--	--	--	--	--	--	--	--	--			
Feb. 11............	0800	33		7910	722	15400	--	--	--	--	--	--	--	--	--			
Feb. 12............	0730	38		5130	290	4020	--	--	--	--	--	--	--	--	--			
Feb. 13............	0850	35		7160	525	10100	--	--	--	--	--	--	--	--	--			
Feb. 14............	1000	32		2820	111	845	--	--	--	--	--	--	--	--	--			
Feb. 15............	1145	32		1950	66	347	--	--	--	--	--	--	--	--	--			
Apr. 7............	0925	40		5320	476	6840	--	--	--	--	--	--	--	--	--			
Apr. 7............	1645	41		9400	1640	41600	17	28	38	48	64	77	93	99	100			BCSW
4-2245. GENESEE RIVER AT MOUNT MORRIS, N. Y.																		
Nov. 6, 1964.......	0900	47		449	40	48												
Dec. 24............	0855	34		112	6	1.8												
Jan. 8, 1965.......	1625	34		310	21	18												
Jan. 9............	1415	35		4080	908	10000												
Jan. 10............	1440	36		4560	388	4780												
Jan. 12............	1120	33		1340	317	1150												

Feb. 9, 1965........	1500	33		2100	586	3320												
Feb. 10.............	1600	34		2210	586	3500												
Feb. 11.............	1610	33		2380	392	2520												
Feb. 12.............	0920	37		4820	924	12000												
Feb. 13.............	1105	33		5020	431	5840												
Feb. 14.............	1050	33		5790	339	5300												
Feb. 15.............	1100	34		7160	344	6650												
Feb. 16.............	0830	34		6820	282	5190												
Feb. 17.............	1910	34		7850	238	5040												
Feb. 18.............	0850	32		7090	135	2580												
Feb. 18.............	1115	32		6940	116	2170												
Apr. 8..............	1440	41		7740	808	16900												
Apr. 9..............	0950	40		7800	465	9790												
Apr. 10.............	1740	45		4030	339	3690												
Apr. 11.............	1740	40		3540	204	1950												

4-2250. CANASERAGA CREEK NEAR DANSVILLE, N. Y.

Dec. 11, 1964.......	2200	36		44	92	11												
Dec. 24.............	1425	43		36	22	2.1												
Jan. 8, 1965........	0845	36		50	167	22												
Jan. 8..............	1535	38		66	791	141												
Jan. 9..............	0050	37		238	1250	803												
Jan. 9..............	0815	37		518	829	1160												
Jan. 9..............	1005	37		518	578	808												
Jan. 9..............	1925	35		331	157	140												
Feb. 8..............	0455	34		958	1020	2640												
Feb. 8..............	1605	33		1260	2430	8270												
Feb. 9..............	0510	33		748	392	792												
Feb. 9..............	1535	35		497	475	637												

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
STREAMS TRIBUTARY TO LAKE ONTARIO--Continued																		
4-2250. CANASERAGA CREEK NEAR DANSVILLE, N. Y.--Continued																		
Feb. 10, 1965	0805	35		595	675	1080												
Feb. 11	0840	34		740	278	555												
Feb. 12	0825	38		716	516	998												
Feb. 13	0755	35		672	144	261												
Feb. 14	0850	33		261	38	27												
Apr. 7	1025	40		1280	2880	9950												
4-2270. CANASERAGA CREEK AT SHAKERS CROSSING, N. Y.																		
Nov. 6, 1964	0930	46		30	22	1.8												
Dec. 24	0835	34		37	5	.5												
Jan. 8, 1965	1555	36		60	28	4.5												
Jan. 9	1440	--		762	138	284												
Jan. 10	1500	34		689	72	134												
Jan. 12	1140	34		229	24	15												
Feb. 9	1410	--		1290	293	1020												
Feb. 10	1525	34		786	590	1250												
Feb. 11	1545	35		927	1000	2500												
Feb. 12	0950	38		1060	348	996												
Feb. 13	1140	34		1190	368	1180												
Feb. 14	1115	32		720	104	202												
Feb. 15	1040	33		381	88	90												
Feb. 16	0845	33		305	66	54												
Feb. 17	1845	35		255	29	20												
Feb. 18	0840	35		249	25	17												
Apr. 8	1455	42		1930	218	1140												
Apr. 9	1105	42		1990	104	559												
Apr. 10	1805	46		828	124	277												
Apr. 11	1750	45		720	98	190												

4-2275. GENESEE RIVER AT JONES BRIDGE NEAR MOUNT MORRIS, N. Y.

Nov. 6, 1964........	0940	--		54	10	1.4												
Dec. 15.............	1000	33		1020	84	231												
Dec. 24.............	0815	36		346	8	7.5												
Jan. 8, 1965........	1205	34		818	27	60												
Jan. 8..............	1530	--		848	24	55												
Jan. 9..............	1500	35		4260	878	10000												
Jan. 10.............	1520	35		4710	460	5850												
Jan. 12.............	1235	34		2220	273	1640												
Feb. 9..............	1355	33		5460	463	6820												
Feb. 10.............	1510	34		8320	796	17900												
Feb. 11.............	1530	34		6970	570	10700												
Feb. 12.............	1215	40		6950	1080	20300												
Feb. 13.............	1155	34		6480	478	8360												
Feb. 14.............	1125	33		6580	380	6750												
Feb. 15.............	1015	33		7030	348	6600												
Feb. 16.............	0900	34		7980	377	8120												
Feb. 17.............	1820	34		8480	452	10300												
Feb. 18.............	0815	33		7900	309	6590												
Feb. 18.............	1235	33		7620	270	5550												
Feb. 18.............	1600	33		7340	662	13100												
Feb. 20.............	0900	32		967	108	282												
Apr. 8..............	1515	42		7800	1100	23200												
Apr. 9..............	1500	42		8140	431	9470												
Apr. 10.............	1915	46		4100	482	5340												
Apr. 11.............	1850	46		3670	247	2450												

4-2285. GENESEE RIVER AT AVON, N. Y.

Dec. 24, 1964.......	0725	39		477	11	14	--	--	--	--	--	--	--	--				
Jan. 8, 1965........	1455	34		1240	14	47	--	--	--	--	--	--	--	--				
Jan. 9..............	1545	32		2400	353	2290	--	--	--	--	--	--	--	--				
Jan. 10.............	1555	35		4390	808	9580	--	--	--	--	--	--	--	--				
Jan. 12.............	1210	33		4060	216	2370	--	--	--	--	--	--	--	--				
Feb. 8..............	1600	34		2780	89	668	--	--	--	--	--	--	--	--				

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
STREAMS TRIBUTARY TO LAKE ONTARIO--Continued																		
4-2285. GENESEE RIVER AT AVON, N. Y.--Continued																		
Feb. 9, 1965	1305	--		4300	311	3610	--	--	--	--	--	--	--	--				
Feb. 10	1415	36		4520	442	5390	--	--	--	--	--	--	--	--				
Feb. 11	1445	34		5670	423	6480	--	--	--	--	--	--	--	--				
Feb. 12	1310	39		5960	422	6790	--	--	--	--	--	--	--	--				
Feb. 13	1320	32		8490	646	14800	27	38	49	64	81	93	98	100				BCSW
Feb. 13	1320	32		8490	646	14800	12	19	31	47	81	88	97	99				BNS
Feb. 14	1210	33		6900	492	9160	--	--	--	--	--	--	--	--				
Feb. 15	0930	33		6990	501	9460	--	--	--	--	--	--	--	--				
Feb. 16	1030	34		7390	512	10200	--	--	--	--	--	--	--	--				
Feb. 16	1330	34		7380	510	10200	--	--	--	--	--	--	--	--				
Feb. 17	1740	35		8020	519	11200	--	--	--	--	--	--	--	--				
Feb. 18	0730	34		7990	471	10200	--	--	--	--	--	--	--	--				
Feb. 18	1625	32		7710	375	7810	--	--	--	--	--	--	--	--				
Feb. 18	1800	32		7640	379	7820	--	--	--	--	--	--	--	--				
Feb. 20	0815	32		2880	165	1280	--	--	--	--	--	--	--	--				
Apr. 8	1600	--		6720	986	17900	--	--	--	--	--	--	--	--				
Apr. 9	1430	42		8060	751	16300	--	--	--	--	--	--	--	--				
Apr. 9	1500	42		8060	723	15700	22	31	42	53	67	83	96	99	100			BCSW
Apr. 10	1840	44		6150	484	8040	--	--	--	--	--	--	--	--				
Apr. 11	1830	--		4310	391	4550	--	--	--	--	--	--	--	--				
4-2295. HONEOYE CREEK AT HONEOYE FALLS, N. Y.																		
Dec. 24, 1964	0615	36		11	5	0.1												
Jan. 8, 1965	1200	34		18	10	.5												
Jan. 8	2010	36		19	21	1.1												
Jan. 9	0745	34		19	8	.4												
Jan. 9	1240	34		17	8	.4												
Jan. 9	1740	--		30	78	6.3												

Feb. 8, 1965........	1520	33		460	195	242												
Feb. 9..............	1215	33		485	71	93										
Feb. 10.............	1335	34		328	70	62										
Feb. 11.............	1320	34		350	59	56										
Feb. 12.............	1340	35		286	73	56										
Feb. 13.............	1420	33		336	50	45										
Apr. 7..............	1200	41		266	36	26										
Apr. 8..............	1635	46		1050	68	193										
4-2303.8. OATKA CREEK AT WARSAW, N. Y.																
Dec. 12, 1964.......	0300	34		90	496	120	--	--	--	--	--	--	--	--	--			
Dec. 12.............	1620	--		66	134	24	--	--	--	--	--	--	--	--	--			
Dec. 24.............	0950	36		28	44	3.3	--	--	--	--	--	--	--	--	--			
Jan. 8, 1965........	1000	34		24	277	18	--	--	--	--	--	--	--	--	--			
Jan. 8..............	1340	32		66	1630	290	--	--	--	--	--	--	--	--	--			
Jan. 8..............	1820	34		260	1890	1330	--	--	--	--	--	--	--	--	--			
Jan. 9..............	0605	39		570	2680	4120	--	--	--	--	--	--	--	--	--			
Jan. 9..............	1240	36		275	956	710	--	--	--	--	--	--	--	--	--			
Feb. 8..............	1010	33		527	1230	1750	--	--	--	--	--	--	--	--	--			
Feb. 8..............	1715	34		633	1270	2170	--	--	--	--	--	--	--	--	--			
Feb. 9..............	1040	34		216	354	206	--	--	--	--	--	--	--	--	--			
Feb. 10.............	1130	36		236	871	555	--	--	--	--	--	--	--	--	--			
Feb. 11.............	1650	36		248	385	258	--	--	--	--	--	--	--	--	--			
Apr. 7..............	0930	37		772	2080	4340	12	19	30	41	51	73	92	98	100			BCSW
Apr. 7..............	0930	37		772	2080	4340	4	8	14	23	43	61	82	93	98	99		BNS
Apr. 7..............	1720	42		614	614	1020	--	--	--	--	--	--	--	--	--			
Apr. 8..............	0335	37		305	360	296	--	--	--	--	--	--	--	--	--			
Apr. 8..............	1410	--		176	160	76	--	--	--	--	--	--	--	--	--			

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
STREAMS TRIBUTARY TO LAKE ONTARIO--Continued																		
4-2305. OATKA CREEK AT GARBUTT, N. Y.																		
Dec. 24, 1964	0655	39		29	32	2.5												
Jan. 8, 1965	1520	34		40	26	2.8												
Jan. 8	2140	--		43	36	4.2												
Jan. 9	0700	40		48	43	5.6												
Jan. 9	1200	39		52	31	4.4												
Jan. 9	1620	--		56	18	2.7												
Feb. 8	1435	34		170	26	12												
Feb. 9	1135	34		457	46	57												
Feb. 10	1300	36		995	145	390												
Feb. 11	1245	35		1110	47	141												
Feb. 12	1340	38		1410	85	324												
Feb. 13	1355	34		988	41	109												
Feb. 14	1255	33		721	25	49												
Feb. 15	1945	35		489	21	28												
Apr. 7	1240	41		747	28	56												
Apr. 8	1705	46		1330	78	280												
4-2324.48. KEUKA INLET AT PLEASANT VALLEY, N. Y.																		
July 21, 1964	1750	70		E 140	1040	E 390												
July 21	1835	69		E 135	785	E 290												
4-2326.3. KENDIG CREEK NEAR MacDOUGALL, N. Y.																		
Feb. 8, 1965	1355	33		70	66	12												
Feb. 9	0040			62	36	6.0												
Feb. 9	0940			46	26	3.2												
Feb. 10	1635			62	88	15												
Feb. 10	2015			68	92	17												
Feb. 11	0930			37	48	4.8												

4-2330. CAYUGA INLET NEAR ITHACA, N. Y.																		
Feb. 8, 1965........	1530	33		239	1750	1130												
Feb. 9.............	0220			148	495	198												
Feb. 10............	1910			100	366	99												
4-2340. FALL CREEK AT ITHACA, N. Y.																		
Feb. 8, 1965........	1625			740	649	1300												
Feb. 9.............	0315			1050	194	550												
Feb. 10............	1835			788	111	236												
4-2340.18. SALMON CREEK AT LUDLOWVILLE, N. Y.																		
Feb. 8, 1965........	1725			510	673	927												
Feb. 9.............	0405			493	178	237												
Feb. 10............	1755			390	288	303												
4-2340.35. CANOGA CREEK AT CANOGA, N. Y.																		
Dec. 11, 1964.......	1915	33		0.6	16	T												
Jan. 8, 1965........	0900	32		.9	10	T												
Feb. 8.............	1320	34		26	115	8.1												
Feb. 9.............	0110	--		18	68	3.3												
Feb. 10............	1655	--		16	140	6.0												
Feb. 12............	1935	40		12	82	2.6												
4-2342. MUD CREEK AT EAST VICTOR, N. Y.																		
Jan. 8, 1965........	1125	36		4.5	6	0.1												
Jan. 8.............	1930	34		6.9	4	.1												
Jan. 9.............	1100	34		32	50	4.3												
Jan. 9.............	1530	34		47	62	7.9												
Jan. 9.............	2015	--		71	51	9.8												
Feb. 8.............	0830	--		371	273	273												

E Estimated.
T Less than 0.05 ton.

MISCELLANEOUS ANALYSES OF LAKES AND STREAMS IN ST. LAWRENCE RIVER BASIN--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
STREAMS TRIBUTARY TO LAKE ONTARIO--Continued																		
4-2342. MUD CREEK AT EAST VICTOR, N. Y.--Continued																		
Feb. 8, 1965	2135	--		492	113	150												
Feb. 9	0715	--		357	53	51												
Feb. 10	1355	--		255	79	54												
Feb. 12	1440	37		227	81	50												
Feb. 13	1500	36		220	85	50												
4-2342.7. RED CREEK NEAR WALWORTH, N. Y.																		
Feb. 8, 1965	0925	--		18	9	0.4												
Feb. 8	2055	--		31	7	.6												
Feb. 10	1320	33		48	11	1.4												
Feb. 13	1540	36		103	5	1.4												
Feb. 14	1420	33		124	7	2.3												
4-2344.5. NAPLES CREEK AT NAPLES, N. Y.																		
Jan. 8, 1965	1645	34		28	39	2.9												
Jan. 8	2345	38		41	86	9.5												
Jan. 9	0845	36		78	142	30												
Jan. 9	1330	36		64	32	5.5												
Feb. 8	1100	34		180	177	86												
Feb. 8	2310	--		140	90	34												
Feb. 9	0825	--		E 110	24	E 7												
Feb. 10	1510	--		84	49	11												
4-2350. CANANDAIGUA OUTLET AT CHAPIN, N. Y.																		
Jan. 8, 1965	1040	34		21	19	1.1												
Jan. 8	1810	34		24	18	1.2												
Jan. 9	0945	38		28	9	.7												
Jan. 9	1430	--		26	24	1.7												
Feb. 8	0955	34		213	87	50												
Feb. 8	2210	--		192	35	18												
Feb. 10	1420	35		77	43	8.9												

4-2351.5. FLINT CREEK AT POTTER, N. Y.

July 21, 1964	1730	68		2.0	89	0.5												
July 21	1820	68		1.8	65	.3												
July 22	0830	66		1.3	97	.3												
Dec. 11	2050	34		3.5	14	.1												
Jan. 8, 1965	1720	33		5.2	7	.1												
Jan. 9	0910	33		13	14	.5												
Jan. 9	1355	33		17	23	1.0												
Jan. 9	1840	--		25	38	2.6												
Feb. 8	1140	33		46	38	4.7												
Feb. 8	2345	--		105	75	21												
Feb. 9	0850	--		166	37	16												
Feb. 10	1535	--		253	12	8.2												

4-2352.5. FLINT CREEK AT PHELPS, N. Y.

Jan. 8, 1965	1000	34		4.5	12	0.1												
Jan. 8	1840	34		14	5	.2												
Jan. 9	1445	34		28	17	1.3												
Jan. 9	1935	--		26	9	.6												
Feb. 8	1245	33		470	64	81												
Feb. 8	2010	--		425	67	77												
Feb. 10	1240	33		215	97	56												
Feb. 12	1515	35		255	289	199												
Feb. 13	1615	34		260	71	50												

E Estimated.

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